

**FROM THE CRADLE TO THE
CRAZE:
A STUDY ON CHINA'S INDIGENOUS
AUTOMOBILE INDUSTRY,
1953-2007**

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ABSTRACT

The Chinese automotive industry has evolved substantially over the last 55 years, in spite of multiple historical and economic hurdles. The change in the governmental policy during 1980s regarding ownership of private automobiles, from prohibition to encouragement, initiated rapid growth in the Chinese automobile industry. In the last two decades, China progressed from being nearly a truck-only producer to becoming a major producer of passenger and commercial cars. Economists consider the time between 2001 and 2007 to be a period of ‘blowout’ in the Chinese automobile industry.

To date, little is known regarding this emerging automobile industry: What are the features of Chinese automobile industry? Has the Chinese automobile industry become a global player in its industry and reached economy of scale? How is the indigenous automobile sector different from international joint ventures in China? Have Chinese companies gained full transfer of technology and come to possess the capacity to develop their own designs? The subject is complicated, with many contradictory facts and interpretations.

This thesis intends to address these questions by focusing on the Chinese indigenous automobile sector, through its three stages of development, using it as a model to examine the validity of various interpretations. I hope the historical appraisal of the industry’s initial development, its difficulty in transition and the internal-external factors affecting the later growth will help us understand the industrial and technological development of China’s emerging economy.

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In 1974, I completed my studies in modern Chinese history as a B. Litt. graduate at St. John's College in Oxford. In 2006, 32 years later, I was encouraged by Sir Michael Scholar, the President of St. John's College, to continue my academic pursuits. I would like to thank him for this recommendation to re-enter St. John's; it has given me an amazing opportunity in my life. A special mention must go to Dr. Anthony Boyce and Dr. Joyce Boyce, who shared their ideas and provided assistance during my arrival and stay in Oxford. At St. John's College, my heartfelt gratitude goes to Professor Robin Ostle who has been most caring towards my life and

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I have been fortunate enough to share the joys and the frustration of being a graduate student again with my friends Roger Mo, Willy Luo, Monique Luo, George Chou, Esther Wee, David Hu and Teri Cahill, who have encouraged me all the way through the past three years. It would not have been possible for me to study again in Oxford at the age 58 without leaving my family responsibility and company duties to my wife Lisa. Her incomparable understanding and

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I would like to reserve my last thanks to my parents, who raised me and supported in Oxford in the early 1970s. My farther, an honoured military veteran, always wanted to see me move up to another academic level, but, sadly, he passed away on 2 January 2008, at the age of 99. I hope he sees that I have dedicated my work to his wish. In particular, I owe it to my mother who gave me all her love and directed me to be properly educated and disciplined, as well as to be a useful person. Unfortunately, both of them are no longer with me and I could not do anything to repay their good grace and love in the rest of my life.

I am fully aware that these acknowledgements are but a trivial way to return the debts I have accrued before and during the writing of this thesis. I am even more convinced, as I learn more about this industry, that my research works will only constitute a humble step towards the deeper understanding of this field. With various references and assistance along the course in writing this thesis, I alone assume the responsibility for any mistakes it contains.

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List of Abbreviations

AASPIC	Anhui Automobile Spare Parts and Industrial Company
AIP	State Department-issued Automobile Industry Policy
AMC	American Motor Corporation
AVL	Anstalt fur Verbrennungs Kraft Maschinen
BAW	Beijing Automobile Works
BCA	Brilliance China Auto
BMW	Bayerische Motoren Werke AG
BYD	Bi-Ya-Di
CAIC	China Automobile Industry Company
CHAC	China Honda Automobile Company
CKD	Complete Knock Down system
C-NCAP	China-New Car Assessment Programme
CUV	City Utility Vehicle
CVVT	Continuing Variable Valve Timing
DAE	Dongan Automotive Engine
DMC	Dongfeng Motor Corporation
FAW	First Automobile Works
F DI	Foreign Direct Investment
GAIC	Guangzhou Automobile and Industrial Company
GAIG	Guangzhou Automobile Industry Group
GDP	Gross Domestic Product
GM	General Motors
GPS	Global positioning system

Haima	Hainan-Mazda
HKSE	Hong Kong Stock Exchange
JV	Joint venture
LAC	Long- term Average Cost
MCIC	Malaysia and China Investment Corporation
MMC	Mitsubishi Motor Corporation
MNC	Multi-national Corporation
MPV	Multi-purpose vehicle
NAC	Nanjing Automobile Corporation
NAIC	Nanjing Automobile and Industrial Corporation
NHTSA	US National Highway Transportation and Safety Agency
NYSE	New York Stock Exchange
PGHL	Proper Glory Holding Limited
PRC	People’s Republic of China
Politburo	Political Bureau of the Central Committee
RPM	Revolutions per minute
SAC	Short-term Average Cost
SAIC	Shanghai Automotive Industry Corporation
SAME	Shenyang Automobile Manufacturing Enterprise
SARS	Severe Acute Respiratory Syndrome
SAW	Second Auto Works
SOE	State-owned Enterprises
SRS	Supplemental Restraints System
SUV	Sport utility vehicle
SYJBV	Shenyang Jinbei Vehicle Company
WTO	World Trade Organisation

Chapter 1: Introduction

1.1 Automobile production as of 2007: China and the world

A substantial Chinese automotive industry has evolved over the last 56 years, in spite of many hurdles, including a national prohibition on the private ownership of automotive vehicles that lasted until the 1980s. Suffering from the exploitation by colonial and imperial powers throughout the nineteenth century, the war with Japan (1937-1945) and the domestic civil wars (1930-1950), China did not have the capacity to build an automotive industry before 1949. Until the 1950s vehicles that carried commercial goods, passengers, and arms in China were all imported from the UK, Germany, Russia, and the USA. In 1953, with the technical and financial assistance of the Soviet Union, China established its first state-owned automobile manufacturer in the northern city of Changchun in Jilin Province. The factory, named ‘Diyi Qiche Chang’ (First Automobile Works, FAW) was created from scratch, and three years later in 1956 its first truck called ‘Jie Fang’ (Liberation) was built. However, the Sino-Soviet dispute in the early 1960s resulted in a complete withdrawal of Russian aid and technicians from China. FAW had to rely on its own limited resources to continue building trucks. In 1969, fifteen years after the founding of FAW, China launched its first independently-produced passenger car, ‘Hongqi’ (Red Flag), and immediately afterwards set up a second factory in Shiyan in Hubei Province in central China. Over the next fifteen years (from 1970 to 1985), as China went through political upheaval, the entire auto industry was limited to truck and utility vehicle production, and made no significant progress. It was only after 1985 that the Chinese government started to encourage private ownership of automobiles. As

illustrated in Figure 1.1, China's passenger car production started from practically nothing in 1958 and had grown to an impressive 4.79 million units by 2007, while its total production of both passenger cars and trucks (4.01 million) reached approximately 8.8 million units. Furthermore, as Figure 1.2 illustrates, China's vehicle production amounted to approximately 12 percent of the global production of automobiles in 2007.

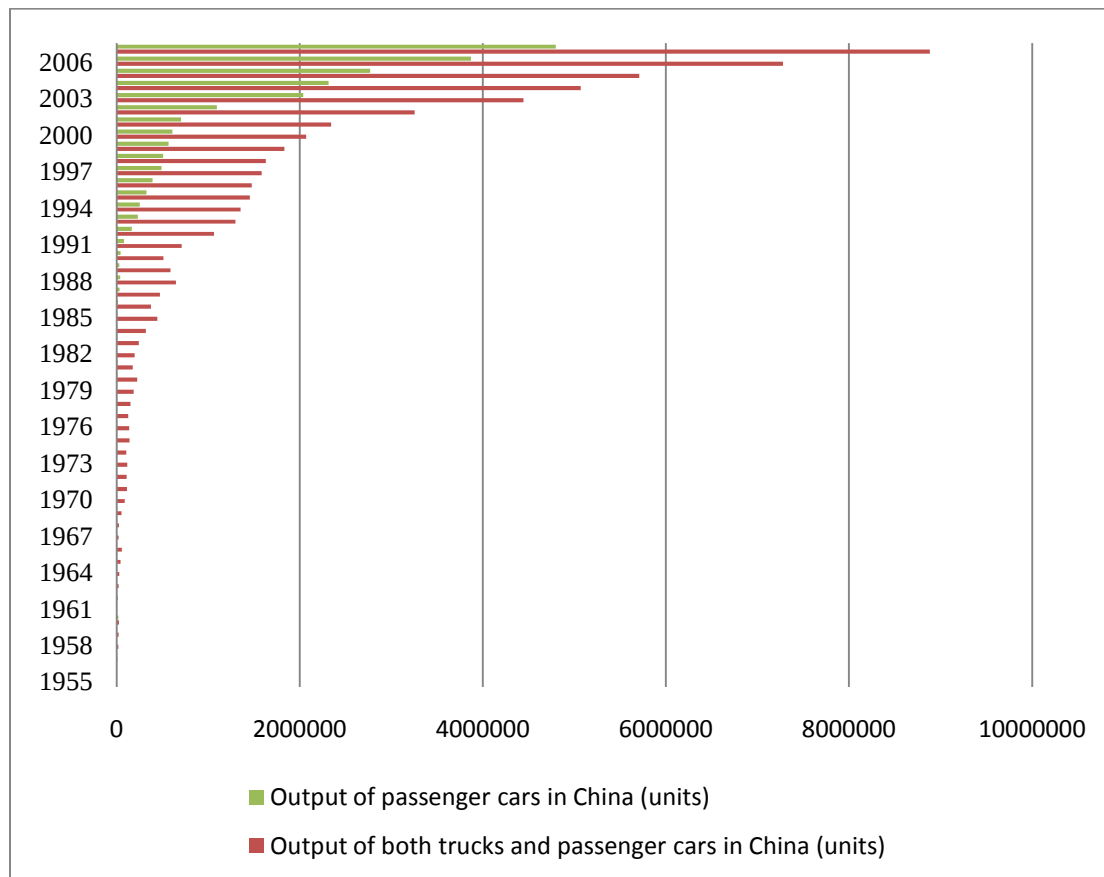


Figure 1. 1. Total output of automobile units (trucks and passenger cars) in China, 1955-2007¹

¹ The author of this thesis has made this figure, based on data collected from Zhongguo Qiche Gongye Xiehui Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 1998*, *中国汽车工业年鉴 1998 (China Automotive Industry Yearbook 1998)* (Tianjin: Zhongguo Qiche Gongye Nianjian Qikan She, 1998). Page 127; Zhongguo Qiche Gongye Xiehui Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2000*, *中国汽车工业年鉴 2000 (China Automotive*

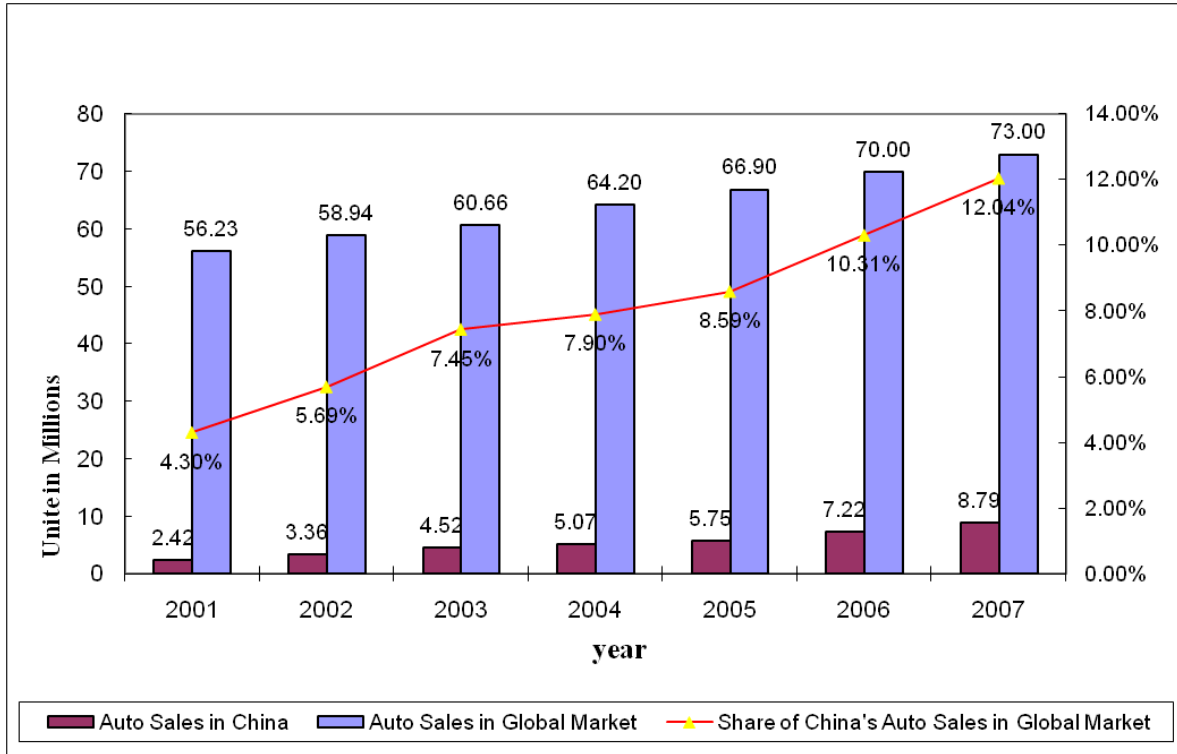


Figure 1. 2. Automobile sales of China and global markets, 2001-2007²

As we can see then, it is only in the last two decades that China has progressed from almost solely producing trucks to being a major producer of passenger cars and commercial vehicles. The combined output of Chinese domestic manufacturing and joint

Industry Yearbook 2000) (Tianjin: Zhongguo Qiche Gongye Nianjian Qikan She, 2000). Page 324; Zhongguo Qiche Gongye Xiehui Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2008*, *中国汽车工业年鉴 2008 (China Automotive Industry Yearbook 2008)* (2008 edn., Tianjin: Zhongguo Qiche Gongye Nianjian Qikan She, 2008). Page 475.

² Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2008*, *中国汽车工业年鉴 2008 (China Automotive Industry Yearbook 2008)*. Page 290.

ventures (JV) with foreign partners totalled approximately 7.28 million units in 2006,³ and reached approximately 8.49 million units in 2007.⁴ China has overtaken both Japan and Germany to become the second largest car sales nation (by units), after the USA, and has surpassed Germany to turn into the third largest vehicle producing country, behind Japan and the USA. The private ownership of cars has reached more than 20 percent of total vehicle numbers.⁵ Whilst worldwide automobile production has remained somewhat stagnant, the Chinese automobile industry has progressed remarkably. Between 2000 and 2007, it experienced an unprecedented ‘blowout’ period, with a growth rate of approximately 20 percent per year and both production and sales of vehicles exceeding 20 million units. The Chinese auto industry took off in the mid-1980s through JVs with foreign automakers, and followed with the emergence of the Chinese indigenous automakers in the late 1990s. As illustrated in Figure 1.3, in 2003 and 2004 the growth rate of passenger cars over the previous year was 38 percent and 36 percent respectively.

³ Caixun (Focus) (ed.), *Qiche Chanye Da Weilai, 汽车产业大未来 (The Great Future of the Automobile Industry)*, (12; Taipei: Caixun Chuban She 2007). page 63; Automotive Resources Asia, *Automotive News, Market Data Book*, Beijing, 2007.

⁴ Guojia Xinxi Zhongxin (National Information Center) and Guojia Fazhan He Gaige Weiyuan Hui Gongye Si (National Reform and Development Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2008 中国汽车市场展望 (China Automotive Market Outlook 2008)* (Beijing: Jijie gongye chuban she (China Machine Press), 2008). Beijing, 2008, Page 87.

⁵ *Ibid.*, Page 432.

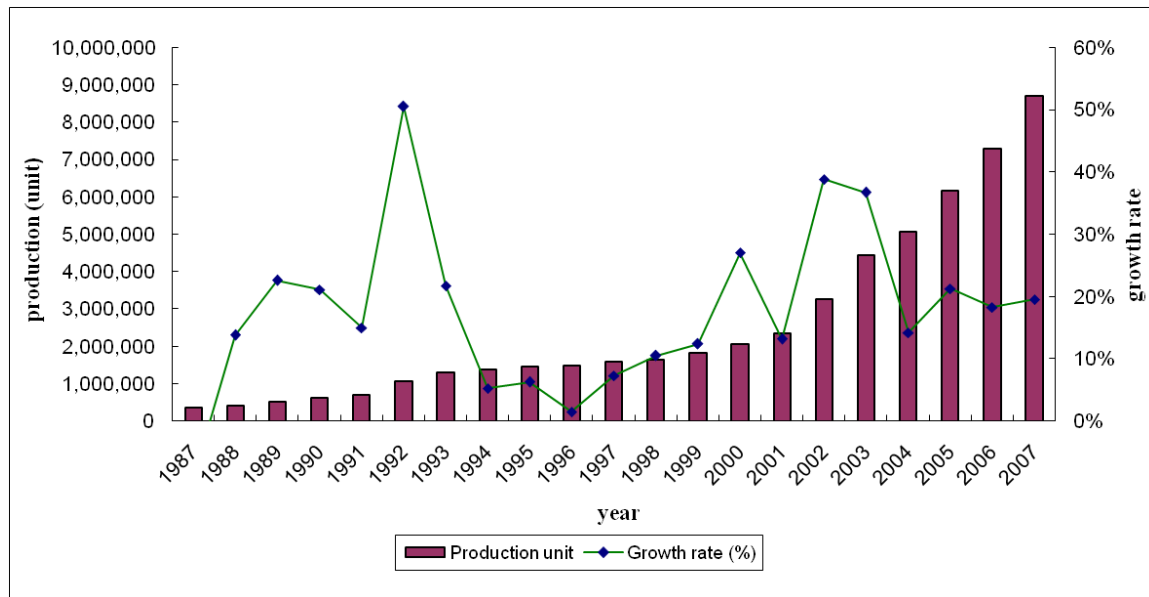


Figure 1. 3. The production of all vehicles and growth rate of the automobile industry in China, 1987-2007⁶

The automobile industry has always been considered a stable yet competitive business, which is capital intensive, and involves cumulative high-technology. The history of the global auto industry shows that manufacturing requires both capital and technology. The largest automobile-producing country, the USA, went through several phases of mergers and acquisition in the twentieth century, and evolved into an oligopoly of just three major automakers. The general context tends to compare China's auto industry today with the historical path taken by the Western nations and Japan. This chapter, however, intends to identify the Chinese indigenous automobile manufacturers from the

⁶ ANON., 2008, 'Zhongguo Gaoasu Shixiang Siren Qiche Shidai 中国高速驶向汽车时代 (China Speeds Towards Fast Lanes) ', http://www.stats.gov.cn/was40/gjtjj_detail.jsp?searchword=%C6%FB%B3%B5%C9%FA%B2%FA&presearchword=%C6%FB%B3%B5&channelid=6697&record=9 , accessed 22 June 2008. The figures include both trucks and passenger vehicles.

general automobile industry in China, which have been intermingled with the participation by multinational automobile companies.

1.2 Theory formation and interpretation

To understand where China's automotive industry is going, it is important to find out where it has come from. The sudden surge in Chinese domestic car manufacturing is worth exploring since it provides a useful measurement of the performance of China's entire automobile industry. At the time of writing (2009), there are 26 JVs and 22 Chinese indigenous automakers, which have together produced hundreds of passenger and commercial models. They might not have all reached a significant scale, but they have survived a turbulent period in the industry and their experience provides valuable insight into the development of the Chinese economy as a whole. In the light of China's emergence as an economic power, there have been two different viewpoints regarding the future of China's automobile industry. Firstly, China's growing automobile sector is an immediate and pressing threat to the more established automakers in other countries;⁷ and secondly, that China's upstart auto industry will not be competitive in the USA or other fast-paced global marketplaces.⁸

⁷ Waldmeir, Patti, 2008, Financial Times 'Chinese car sales gather speed', <<http://www.ft.com/cms/s/0/c180be9e-b1a2-11dd-b97a-0000779fd18c.html>>, accessed 14 November 2008; Bradsher, Keith, 2005, New York Times 'China Looms As the World's Next Leading Auto Exporter', <<http://query.nytimes.com/gst/fullpage.html?res=9503E3DD1431F931A15757C0A9639C8B63>>, accessed 15 January 2007; IBM Institute for Business Value, Michigan, USA, 30 Dec 2005; *World Journal*, Los Angeles 1 Dec 2005.

⁸ Garrett, Jerry, 2009, New York Times 'Chinese Cars Inch Closer to U.S.', <http://www.nytimes.com/2009/01/18/automobiles/autoshow/18CHINA.html?_r=2&scp=5&sq=C

The first hypothesis arose from the following considerations:

- a) For the last quarter of a century China's economy has achieved an impressive and steady annual growth on a scale unmatched by any other country during the same period. As a rising industrial and economic power, China's ambitious production of automobiles is understandable because of the greater demand for personal transport. Chinese automobile firms sold 7 million units of cars domestically in 2006, which was supported by the country's income per capita of just less than USD \$2,000. It is estimated that as income per capita approaches USD \$6,000 auto industry production and sales will surge. The Chinese market has already shown its capacity to absorb products at both the highest and the lowest prices.
- b) China's relatively inexpensive resources of land and labour have made it the world's largest factory, and consequently added the manufacturing of automobiles to China's road map of industrialisation
- c) China has already been competing in the world market by providing diverse products with low pricing; the largest commercial market of automotive products could be accordingly penetrated.
- d) The Chinese government has determined to modernise its primary industries by devolving the responsibility to municipal and provincial levels.

HINESE%20AUTO&st=cse>, accessed 15 January 2009; ANON., 2006 'Too Far and Too Furious', *Economist*, /23 November Automotive Resources Asia, 2007, 'Chinese Cars in the US in Reality', accessed , pages 2-3,2-4.

- e) China's vast domestic market is a hotbed for the trial-and-error expansion of automotive sectors. The Chinese market provides an extensive variety of products at different price levels, which allow considerable flexibility in automobile design. The market economy pervading in China will find its equilibrium between supply and demand as real income in China has steadily increased for the last three decades.
- f) American and some major European automakers have experienced financial problems and stagnant production since the 1990s, which allows China to exploit this opportunity for growth in both domestic and export markets.

The second interpretation, however, derives from very different considerations:

- a) The automobile industry is a business that not only consolidates technologies in energy, electronics, electrical engineering, computers, and ergonomics, but also involves the application of materials including plastic, rubber, petrochemicals, and the manufacturing of systematic machine precision, die casting, conveyor production and automobile body panel coating and painting. The auto industry must combine professional management and skills, and fundamental technology in order to build cars. From an industrial point of view, China only entered the market economy in the 1980s and could not have really built a robust independent auto industry in such a short period of time.
- b) The automobile industry is based on economies of scale. Several countries (such as the UK) have sold the ownership of their automobile production because of the failure to achieve efficiency and because of fierce competition in the global market. After this period of mergers and acquisitions, approximately 80 percent of the world

auto market is now controlled by ten major multinational automobile firms. In the 1980s China still had a few hundred small-size automobile manufacturers that produced inexpensive and basic models, but by the 2000s the number of auto companies had shrunk to fewer than 50 after shake-ups and the market failures of inefficient firms. It is conceivable that most of the small-scale Chinese auto manufacturers will face more severe economic challenges, and might not have the means to cope.

- c) The cost factors in building automobiles are numerous. Apart from land, plant, human resources, investment in tooling for new models, and R&D etc., automakers further require the integration of complicated industrial procedures, which must be supported by advanced manufacturing equipment, machinery and the capacity of component supplier chains. Automobile building involve the use of large volumes of commodities such as steel, copper, aluminium, rubber, and plastics, which are all subject to fluctuations in the global pricing of raw materials such as steel and oil.
- d) A great number of Chinese auto manufacturers and companies are now in JVs with countries such as Germany, the USA, Japan and Korea. The advanced technology and skills required in automobile engineering are normally considered to be the prerogative of those leading international factories, and not to be wholly shared by their Chinese partners. China could not possibly have obtained all the required technology and skills to build cars of a globally acceptable quality.
- e) The Chinese investors in the JVs with leading foreign automakers are either state or local governments, which put constraints on the efficiency of automobile production.

The typical institutional bureaucracy of the Chinese government will preclude the required competence demanded by the auto industry

- f) The sale of automobiles requires a market with adequate purchasing power. China's income per capita does not seem capable of absorbing the State's planned automobile production. The Chinese state-owned banks have not established a fully individual credit rating system and have not offered car loans to potential buyers. Private car ownership facilitated by bank borrowing is very low, and the financial sector does not offer a general credit programme to accommodate the market need. Together, the low income per capita and the banking capacity limits sales and production in the automobile industry.
- g) The Chinese automobile industry must face the challenge of quality, safety and carbon emission targets, which have appeared to be major hurdles for Chinese manufacturers. The general consensus is that China could build inexpensive vehicles, but at the expense of quality. If Chinese automobile firms struggle to build vehicles with a reputable brand name, the exporting of Chinese automobiles will be a difficult task.
- h) China joined the World Trade Organisation (WTO) in 2001, which resulted in a gradual reduction of import tariffs. This gave rise to immediate direct competition between China's domestic automobile products and newly-arrived imports. Moreover, this entailed a need to cut costs and increase technical sophistication in the Chinese car manufacturers' production, which could no longer depend on the protective policies supported by the Chinese government.

These two different interpretations have caused disagreement and confusion in the understanding of the general Chinese automobile industry. The lack of academic research and publication, including in Chinese, impedes a resolution of the two discordant viewpoints. This study, therefore, intends to solve this problem by focusing on the Chinese indigenous automobile sector as a model to examine the validity of each of the two respective interpretations and to understand the position and capacity of the general Chinese automobile industry.

A coherent definition of the term ‘Chinese indigenous automobile industry’ is needed here as the basis of understanding and clarification of the complexity of China’s general automobile industry. As this thesis intends to argue, the term ‘indigenous’ in reference to the Chinese automobile industry refers to Chinese domestic companies which were 100 percent capitalised and either owned by the State or by the citizens of the People’s Republic of China (PRC), and whose manufacturing production was run by Chinese management. By this definition, companies infused with any foreign capital, or partnered with foreign automobile firms will not be considered ‘indigenous’ and their activities will not be the focus of this study. However, because some Chinese automobile companies began production on their own and evolved into JVs with foreign companies in later periods, it is impossible to establish their indigenousness without sorting out whether they were financially involved with foreign companies and when such involvement began.

First Auto Works (FAW), for example, was an indigenous firm between the early 1950s and the early 1980s, and was the most important company in the early history of the

Chinese indigenous automobile industry. However, since the mid-1980s when it entered into JVs with global automakers, such as Volkswagen (VW) and Toyota, and merged with foreign assets, it could no longer be considered an indigenous firm despite its dominant market share in China. The same argument applies to other Chinese state enterprises, such as Dongfeng Motor Corporation (DMC) and Shanghai Automotive Industry Industrial Corporation (SAIC), because their financial structures have not been 100 percent Chinese and they also engaged in JV operations with foreign companies. These automotive state enterprises formed their own independent auto manufacturing divisions with their own capital in the 2000s, and their performance and development will be re-examined. As the word ‘indigenous’ also refers to the management of Chinese production, the core engine technology that Chinese companies adopted in car building will be under assessment because foreign technology was not supplied to them, unlike those companies in the JVs with foreign automobile enterprises. Clarification of the term ‘indigenouness’, and the concentration on the development of the true domestic automobile industry allows for examination of the emerging Chinese automobile industry in a focused manner, while questions suggested by different interpretations can also be clearly answered.

In writing about the history of the Chinese indigenous automobile industry the historical background, both political and economic, the status and scale, technology accumulation, capital and position of China in the market, perception and actual performance cannot be neglected. This presents a series of questions as to what this study intends to answer:

- How has the Chinese automobile industry evolved from a planned economy in the early period of the 1950s to a market economy in the 1980s and beyond? What was early Chinese automobile production like?
- How have these Chinese automobile companies progressed to set up their individual and independent manufacturing? Is there a geographical cluster of automakers in China similar to those in Detroit, Michigan and the Lake Districts in the USA, or in the five major seaport cities (Tokyo, Yokohama, Kobe, Osaka, and Nagoya) in Japan?
- How did China cope with increasing vehicle demand when its economy began to prosper? What role did Chinese government policy play? Were there policies in China to protect its domestic automobile industry from multinational automakers' global positioning in China?
- What successful indigenous factories have formed and how did they begin? Has regional initiation and entrepreneurship played a significant role? How have national and provincial champions risen? What is the competition between them like?
- What were the external factors, such as income per capita and market segments that have affected the development of the Chinese indigenous automobile industry? What was the impact of China becoming a member of the WTO?
- What were the internal factors? What was the extent of their investment? Has the Chinese indigenous auto industry obtained the technology it needed? If yes, how?

If not, how have they dealt with this lack? What was the core technology they tried to obtain? And what were the other factors, such as human resources, in the growth of the Chinese indigenous automobile industry?

Each question needs to be answered properly, but they cannot be answered simply by statistics or data without explaining the significance of the variable factors such as China's politics and changing economic conditions during the period of this study. The enormity of the Chinese market provides the general automobile industry with opportunities to grow, but at the same time intensifies the complexity of the evolving industry.

This thesis intends to achieve three objectives: first, to examine the growth and the convergence of the Chinese indigenous automobile industry from the early 1950s through to 2007. The activities and strategies of the international corporations in China have been studied academically and reported commercially. For instance, Dr. Eric Thun in his book *Changing Lanes in China* has covered the growth of the Chinese automobile industry under foreign direct investments, particularly the Chinese state enterprises and their JVs in the auto sectors during the period of China's globalization and decentralization.⁹ Thus, this study will be focused on the development of self-owned indigenous factories as opposed to the study of the JVs. Second, this thesis intends to identify the determinants which have contributed to the formation and development of the indigenous industry, and to suggest answers to the questions mentioned earlier. Third, it intends to properly position the Chinese indigenous automakers so as to understand the general Chinese

⁹ Thun, Eric, *Changing Lanes in China* (Cambridge: Cambridge University Press, 2006). Part II. Pages 83-272.

automobile industry, and ultimately to reconcile the two contradicting interpretations posted earlier. This thesis represents the first comprehensive attempt to examine the Chinese indigenous automobile industry as a model, and it is hoped that through this study the growth and convergence of China's automobile industry can be better historically addressed.

Chapter 2: The Early History of China's Automobile Industry, 1953-1984

2.1 Distribution of resources under the planned economy

“Scraping snow off the Northern country for three years, and emerging is an automobile city in its cradle”- former Premier Jiang Zemin.¹⁰

In 1983 the former Premier Jiang Zemin, who was a keen Chinese poem writer, inscribed the above statement in one of his poems. He wrote an article in commemoration of the thirtieth anniversary of FAW, in which he gave a detailed recollection of his involvement in the preparation work needed to build the first Chinese automobile assembly plant.

Before 1953 China was mocked, as a nation of the ‘world’s vehicle exposition’, in terms of the number of cars made by foreign automakers that ran across the country. Most of the cars on the roads in China were imported from the UK and USA before the 1950s and from the Soviet Union and Eastern Europe during the 1950s. Most of these cars were driven by a few privileged government officials and the extremely rich. Private passenger cars were rarely seen by the average Chinese citizen, and there were few foreign automakers that would consider China a potential market for exporting their product. There was no capital, technology, or suitable economic environment that might have allowed the Chinese to dream about using a car as a means of day-to-day transportation. The government defined vehicles as a means of transport for military and national

¹⁰ Jiang, Zemin, 'Beiguo Bing San Kai Yizuo Checheng Lai, 北国冰三开 一座车城来 (Scraping Snow off the Northern Country for Three Years, Emerging an Automotive City)', *Zhongguo Qiche Gongye de Yaolan, 中国汽车工业的摇篮 (The Cradle of Chinese Automobile Industry)*; Changchun: First Auto Works, 1983, 42-46. Page 42.

purposes only; the building of vehicles therefore came under the remit of the state economic plan.

The Chinese government's policy for the automobile industry was tied to the social, cultural, political and economic history of the country since the 1950's. From 1950 to 1980, China had a very primitive auto industry, financially and technologically independent of any foreign involvement. However, the auto sector floundered under the state economic plan and the completely closed environment that developed after 1949, when China was recovering from its civil wars. The government had tight control over the growth of automobile manufacturing and investment was entirely from state capital. There was only one government agency, the Ministry of Heavy Industry supervising the automobile industry and the protectionism and closed political economy of these three decades in China brought no any updated automotive technology to the country. The concentration on making trucks for army and government agencies also did not allow for much growth. Before the 1980s, the government adopted a planned economic system, 'Shuang Gui' (Dual Distribution System). Under this system, the government-mandated manufacturers to produce an assigned production amount and distribute them according to state planning, allowing manufacturers to sell the surplus of their production to the free markets. In view of the increasing demand and the profitable future, Chinese automobile factories tended to produce more than the mandated production and sold the overrun for their own interests, despite the fact that they could only manufacture basic and unchanging products. As indicated in Table 2.1, the amount of the production plan exceeded mandatory distribution throughout the 1980s and the rate of the mandatory planned distribution of the actual production fell to just 22.2 percent in 1989 from 92.3

percent in 1982. The government had no choice but to discard the dual distribution system and permitted manufacturers to freely distribute their products according to their own capacity and the principle of market economy.

Table 2. 1. Production and distribution plan under Chinese state planning in the 1980s¹¹

Year	Actual production (Units)	Mandatory distribution plan (Units)	Rate (%)
1982	152000	140360	92.3
1983	184000	146460	79.5
1984	247000	144100	58.3
1985	391000	152350	39
1986	431000	155700	36.1
1987	365000	134400	36.8
1988	415000	140000	33.7
1989	509000	113000	22.2

Although by 2007 the Chinese automobile industry had grown considerably, it is difficult to trace the country's first car industry as there is little documentation recording its early years and growth. The Chinese government states that the Chinese automobile industry started in 1953, a few years after the foundation of the PRC, when the building of FAW started. An earlier history could go back to Kuomintang (National Party) rule in the

¹¹ Economic Daily News (ed.), *Zhongguo Qiche Maoyi Zhinan*, 中国汽车贸易指南, *China Automobile Trade Guide* (Beijing: Economic Daily News Press, 1991). Page 16.

1940s when Song Zi-wen, a notorious financier and brother-in-law of Dr Sun Yat-sen and Chiang Kai-shek, formed two ventures in Zhuzhou and Chongqing, both named the 'China Auto Company'. This company contracted with both the USA's Reo Motor Car Company and the UK's Sterling Motor Cars to design a car model and to build an assembly plant in Hunan Province.¹² Song's company did not succeed for many reasons, including China's civil wars in the 1940s, and lack of technology and financing. The Kuomintang's intention to build an automobile company in China was discovered by the new Communist regime in 1950 when the blueprints for building a model Sterling were found in a cave near Kunming which was previously occupied by the Kuomintang.

Soon after the establishment of the PRC, in 1949, Chairman Mao Zedong and Premier Zhou Enlai signed the 'Sino-Soviet Union Alliance and Trade Treaty' with Joseph Stalin, which was co-ordinated with China's first Five-Year State Economic Plan. In the treaty the Soviet Union agreed to assist China in building a cargo vehicle plant with a long-term loan of USD \$300 million at a 1 percent annual interest rate.¹³ Before 1950, the total number of vehicles existing in China was approximately 100,000 and the only automotive-related businesses were spare parts and maintenance shops.¹⁴ In order to build an automobile business from nothing, a preliminary team was formed in Moscow. Two

¹² Meng, Shaonong, 'Zhongguo Qiche Gongye de Chuangjian, 中国汽车工业的创建 (The Initial Development of Chinese Automobile Industry)', *Zhongguo Qiche Gongye de Yaolan, 中国汽车工业的摇篮 (The Cradle of the Chinese Automobile Industry)*; Changchun: First Auto Works, 1983, 31-35. Page 32.

¹³ Economic Daily News (ed.), *Zhongguo Qiche Maoyi Zhinan, 中国汽车贸易指南, China Automobile Trade Guide*. Page 2.

¹⁴ Lu, Xiaokuan, 'Zuguo Qiche Gongye de Yunyu Shiqi, 祖国汽车工业的孕育时期 (Chinese Automobile Industry in Early Times)', *Zhongguo Qiche Gongye de Yaolan, 中国汽车工业的摇篮 (The Cradle of the Chinese Automobile Industry)*; Changchun: First Auto Works, 1983, 53-59. Page 53.

Russian specialists were sent to Beijing on 2 December 1950 to meet with the Chinese delegates and the target was set of building a truck assembly factory based on the Russian two-ton model 'ZIS 150' with a production capacity of 30,000 units within three years.¹⁵ Based on this plan, the Soviet Union would provide the necessary equipment including the tooling, press machinery and engine design, while China would be responsible for selecting the site, building the assembly factories using its own forces, sending apprentices to Moscow for training, and sourcing its own materials and equipment.

Many cities in the Northern Provinces were initially considered, including Beijing, Shijiazhuang, and Xian, but the final choice was Changchun in Jilin Province because it could provide enough power for the automobile plant.¹⁶ When Changchun was agreed by the Russians as the favoured site in 1951, the city was just recovering from damage from the war with Japan, but had logistical advantages, as it is located in the middle of Northern China, where the Manchurian Railroad passed through to connect with the Russian Trans-Siberian Railway. Three Chinese engineers, Guo Li, Meng Shaolong and Hu Liang were picked as the preparatory team to carry out the functions of site investigation, data collection and coordinating the training of the Chinese workforce. The former Premier and Chinese General Secretary of the Communist Party of China, Jiang Zemin, who was then the first consul of economic affairs in the Chinese embassy at Moscow, was called back to join the work team and witnessed the progress of the

¹⁵ Rao, Bin, 'Dajia Dongshou Zongjie Jingyan Shixian Qiche Gongye Xiandaihua, 大家动手 总结经验 实现汽车工业现代化 (Mobilised with Experience to Modernise the Automobile Industry)', *Ibid.*, 22-30. Page 33. Rao Bing was the first factory director of FAW in 1953.

¹⁶ Zhang, Jiuchun, Zhang Bochun, Yao Fang,, 2004 '20 Shiji 50 Niandai Sulian Yuanjian Diyi Qiche Zhizaochang Gaishu, 20 世纪 50 年代苏联援建第一汽车制造厂概述 (General Introduction of Soviet Union's Assistance in Building FAW in 1950s)', *Haerbin University Journal*, 4, 11-20.

groundwork.¹⁷ Between 1951 and 1953, the Soviet Union sent more than 200 automotive engineering specialists to Northern China to help with the building of the first factory, Diyi Qiche Chang, (or First Auto Works), while at the same time China sent approximately 500 trainees in the fields of engineering, management, and factory design technology to the Stalin Automobile Factory in 1953-1955.

To accommodate the Russian engineers and technicians, the Changchun local government built an office and apartments to ensure their comfort and long stay. After reviewing the initial plan to build an assembly plant with a production capacity of 30,000 vehicles within four years, the Chinese Heavy Industrial Department, (then the responsible corresponding official government agency), was sceptical. But the Russian delegates further amended the terms from four to three years by reducing assistance on their part. It did not take long for the Beijing authorities to respond to the proposal to shorten the time to construct the assembly plant brought up by the preparatory team. Chairman Mao personally gave instructions at the beginning of June 1953 in a memorandum entitled 'Chinese Communist Central Instruction on striving to build an assembly plant in Changchun within three years'.¹⁸ This immediately accelerated the morale and motivation of the central, provincial, and local government agencies and the plant found abundant support from all over the country, both politically and financially.

¹⁷ Jiang, Zemin, 'Beiguo Bing San Kai Yizuo Checheng Lai, 北国冰三开一座车城来 (Scraping Snow off the Northern Country for Three Years, Emerging an Automotive City)'. Page 45

¹⁸ Zhang, Fengshi, 'Lishi de Zhuangju, 历史的壮举 (Great Achievement in History)', *Zhongguo Qiche Gongye de Yaolan, 中国汽车工业的摇篮(The Cradle of the Chinese Automobile Industry)*; Changchun: First Auto Works, 1983, 47-52. Page 48. Zhang was one of the automotive engineers in 1953.

Thus, in late 1953 the Chinese military fifth division was assembled in Changchun as the core team of construction workers. Thousands of skilled machinery workers were selected and gathered from existing automobile repair shops in more than 20 provinces and sent to Changchun. Financially, a special automobile division was formed under the supervision of the central government to oversee the general expenditures of the construction. The Railway Division under the Department of Transportation made arrangements to ensure the smoothness of transportation of machine equipment and automotive materials. The postal and telecommunication department set up direct telephone lines to improve communications between Changchun and Moscow. The Foreign Affairs Ministry hired Russian linguists to perform immediate translation of Russian blueprints, drawings, and technical reports. The government of Jilin Province assisted by providing materials, accommodation and local transportation for the newly arriving engineers, technicians, construction workers, and cadres. The construction of the plant and the installation of the new vehicle-manufacturing equipment had been done simultaneously with planning production, which involved human resources, materials inventory, factory assembly, and logistics. For the workforce, the government recruited skilled technicians, college graduates, and military vehicle maintenance personnel from around the country in addition to establishing six technical schools and one university.¹⁹ By the beginning of 1956, Changchun had evolved as an automobile city with an automotive-related population of 30,000.²⁰

¹⁹ *Ibid.*, Page 51.

²⁰ Rao, Bin, 'Dajia Dongshou Zongjie Jingyan Shixian Qiche Gongye Xiandaihua, 大家动手 总结经验 实现汽车工业现代化 (Mobilised with Experience to Modernise the Automobile Industry)', *Zhongguo*

The assembly plant was originally code-named the '652 Factory' because during the Korean War the Chinese government still considered building military and cargo trucks to be a national secret. The grand opening of the factory was held on 15 July 1953 and the first model planned to be built there was the four-ton truck 'Jie Fang CA10' or 'Liberation', based on the same chassis design as in the series of the Russian GAZ factory.²¹ Although the Soviet Union agreed to provide the primary engine and machinery, the Chinese realised that some of the equipment was not Russian-made and still needed to be imported from other European countries. Many press, precision and hydraulic machines would have to be imported by the Chinese themselves from the UK, East Germany, and Czechoslovakia to save costs and extra handling. Under the Sino-Soviet Union agreement, a Russian technical delegation office was created in Changchun to coordinate the installation of equipment and the building of the plant.

The opening ceremony took place on 15 July 1953 and this was officially considered by the Chinese government as the birth of the Chinese automobile industry. It was an exciting day for the tens of thousands of spectators who gathered at the site and a gratifying day for the Chinese who were anxious to see the birth of an indigenous automobile industry. However, the difficulties confronted in the actual production and the problems of reaching efficiency continued. During the construction of the plant, the

Qiche Gongye de Yaolan, *中国汽车工业的摇篮 (The Cradle of the Chinese Automobile Industry)*; Changchun: First Auto Works, 1983, 22-30. Page 29.

²¹ ZIS stands for Gorkovsky Avtomobilny Zavod, or Gorky Automobile Factory. This factory was founded in 1932, with technical assistance from America's Ford Motor Company and Austin Company. It was then the largest manufacturer of trucks in the Soviet Union. The Austin Company, 2001, The Western Reserve Historical Society 'Austin-GAZ-Ford, Americans and the Industrialization of Russia in the 1930s, Cleveland- Nizhny Novgorod- Detroit', <<http://clubs.hemmings.com/clubsites/nomac/allpage.pdf>>, accessed 26 April, 2009.

severe climate in Northern China affected the comfort of the workers, who had to break hourly to retreat from the cold. A locomotive was hauled to the site with a running steam engine - not for transportation, but to blow out hot steam as heat for the workers who were laying electric and water pipes underground and were exposed to the elements.²²

At the end of 1954, the construction headquarters was centralised as one single responsible administration unit combining the Huadong and Shenyang Electrical Engineering Installation Companies. The first division was designed to form cold metal and as a working assembly plant, the second division for non-standard equipment assembly, the third as a power plant, the fourth as an electricity distribution control station, and the fifth division were responsible for all conduit pipe and ducting line for the complete system. By the end of 1954, more than 500 machine tools and pieces of metal cutting equipment were installed according to the master plan. In 1955, the departments of plant construction, equipment installation, and production assembly were further integrated for the purpose of smooth progress. Many coordination meetings among the three departments were called, including political and ideological ones, to boost the morale and working spirit in each unit.

With strong backing across the nation, the making of the Chinese automobile had become a political movement and something of a major national concern. After three years of preparation, the Changchun suburban village of Shi Hu had been turned into a giant Russian-style assembly plant. On 15 July 1956, the day after the first Chinese cargo

²² Zhu, Jinfu, 'Cong Tonggong Dao Laomo, 从童工到劳模 (From a Young Apprentice to Model Worker)', *Zhongguo Qiche Gongye de Yaolan, 中国汽车工业的摇篮(The Cradle of the Chinese Automobile Industry)*; Changchun: First Auto Works, 1983, 104-05. Page 105. Zhu participated in the construction work of FAW in 1953 and became the Vice Factory Director in FAW in 1983.

truck 'Jie Fang' had rolled off FAW assembly line and exactly three years after the opening of the factory, twelve 'Jie Fang' trucks were paraded along Stalin Street through the crowds to the sound of cheers and fireworks. The trucks proceeded to the public square of the Changchun municipal government, and were presented as China's first vehicles. However, the quality of the vehicles that were dispatched to the parade was in truth far from perfect. Many problems were quickly found, such as the steering wheel weighing too much, the driver's compartment being small and hot, while the radiator could not dissipate the heat so the cap blew. Each problem needed to be fixed, and the State Vehicle Inspection Committee delayed the quality approval and only allowed FAW to officially produce the model 'Jie Fang CA10' three months later on 15 October 1956.²³

During the new vehicle launch procession, the Chinese did not forget the technical assistance rendered by the Soviet Union, so the parade team proceeded to the Russian residence in Changchun to present gifts to the Russian personnel and technicians to show their appreciation.²⁴ On 17 October 1956 the First Engineering Division of the Heavy Industry Department held a ceremony at FAW to present an appreciation award, plus a brand-new Jie Fang vehicle, to the 37 Russian technicians stationed at FAW who had assisted in the building of the factory.²⁵ As well as the loan that the Soviet Union had

²³ Huang, Zhaoluan, 'Xue Erhou Zhi Buzu, 学而后知不足 (Learn to Be Humble)', *Zhongguo Qiche Gongye de Yaolan, 中国汽车工业的摇篮 (The Cradle of the Chinese Automobile Industry)*; Changchun: First Auto Works, 1983, 127-30. Page 134: Huang Zaojian was the party secretary in the engine block division of the engine department in 1956.

²⁴ Wang, Lizhong, 'Wo Zui Zhengui de Yizhang Zhaopian, 我最珍贵的一张照片 (My Most Treasured Photo)', *Ibid.*, 165-66. Page 164. Wang was one of the drivers during the parade.

²⁵ Sun, Guowu (ed.), *Diyi Qiche Wushinian Dashiji, 1953-2003, 第一汽车五十年大事记 (Chronological Events of FAW, 1953-2003)* (Changchun: Zhongguo Diyi Qiche Jituan Gongsi, 2003). Page 27

made to China, the technology was also Russian. According to FAW's archive, the Soviet Union's contribution to the building of FAW fell into the following seven areas:

1. Blueprint and design of the factory
2. Complete engineering design and related technological documentation of the Russian ZIS-150 model
3. Complete production engineering design and documentation
4. Eight percent of the general equipment and major machinery
5. Tooling and mould for the body panels
6. The dispatch of 188 engineers and specialists to FAW
7. The training of 539 Chinese students and apprentices.²⁶

However, China's efforts in building this plant were also substantial. First, it took responsibility for the production of the tooling, moulds and metal materials;²⁷ second, it took on the primary production of the engine block, chassis, and body structure without relying on imports from the Soviet Union. Third, changes were made to the Russian model of component manufacture so as to fine-tune them and make adjustment for the Chinese weather. For instance, as mentioned before, the radiator for the Russian climate did not dissipate the heat, causing overheating problems, and also the fin had to be made

²⁶ *Ibid*,

²⁷ Zhang, Bochun, '20 Shiji 50 Niandai Sulian Yuanjian Diyi Qiche Zhizaochang Gaishu, 20 世纪 50 年代苏联援建第一汽车制造厂概述 (General Introduction of Soviet Union's Assistance in Building FAW in 1950s)', Volume 4. Page 15.

thicker to cope with the hotter and more humid weather in China. Fourth, FAW followed the Soviet Union's factory building plan without short cuts and carried out the vehicle engineering construction and management system thoroughly, which provided FAW with a firm foundation. Even when the Soviet Union withdrew their technical assistance from China in 1958, the materials shortage was temporary and the work did not run into any interruptions until the Cultural Revolution in 1967. By 1964 China had built steel factories in Northern China and FAW had complete control of the materials needed for building its vehicles. Fifth, through government distribution and delegation, more than 150 factories for component-and-machinery manufacture had been created across the country and later provided a foundation for the scattered automobile factories that mushroomed in the 1990s.²⁸

The period 1953-56 was the difficult beginning in which FAW focused on making a single model of the Jie Fang, which integrated components and parts from its own supply chains. The efficiency of production under a planned economy was not compatible with the modes of supply and demand that prevailed in developed countries in the West. However, as the government directed FAW to manufacture a single type of vehicle to supply the whole nation, the production quantity and quality was sufficient. In the same year, 1956, the Chinese Communist Party Central Committee set an accounting guideline to ensure there no waste in the production procedures. Russian economists were present to explain the planned economy, pricing methods, cost accounting and auditing procedures. The Chinese personnel were responsible for bookkeeping, recording all

²⁸ *Ibid.*, Page 15.

materials purchased, expenses for logistics and warehousing, and tool and equipment management. The Chief Director, Rao Bing, took the lead in the central plant which worked with the accounting department to ensure compliance with the guidelines set by central government.²⁹ According to Rao, 87 percent of the engineering department, 90 percent of the work section, 76 percent of the working team, and 81 percent of FAW's personnel had been brought under the principle of cost accounting by 1957.³⁰

When the Sino-Soviet Union relationship began to deteriorate over ideological issues and border disputes with India between 1958 and October 1964, the Russians withdrew their technical and economic assistance to China including the personnel stationed in Changchun. By this time FAW was capable of managing the technology left behind by the Russian engineering team. In 1958 FAW produced more than 16,000 trucks but this was still short of the 30,000 unit production capacity originally predicted, and the balance demanded was not imported. At the end of the Korean War in 1953, under Chairman Mao Zedong's direction, the decision to build the Second Auto Works (SAW) was made and Changde, in Hunan Province, was chosen as the site of the factory. However, the famine in 1960-1963 had a severe impact not only on the economy but also on mortality rates in most of the country. In 1958 Mao Zedong and the Communist Party's Central Committee designed a new socio-economic and political system to flourish in rural regions called 'Ren Min Gong She' or 'People's Commune' which turned out to be a

²⁹ Zhang, Jianfei, 'Dui Kaizhan Banzu Jingji Hesuan de Huiyi, 对开展班组经济核算的回忆 (Recollection of the Development of Accounting and Auditing in FAW)', *Zhongguo Qiche Gongye de Yaolan, 中国汽车工业的摇篮 (The Cradle of the Chinese Automobile Industry)*; Changchun: First Auto Works, 1983, 176-78. Page 177: Zhang was the Director of FAW's Economic Planning Department in 1956.

³⁰ *Ibid.*

national calamity.³¹ This compounded with the massive fiasco of the ‘Great Leap Forward Movement’ (1958-1961), which was another government quick fix economic and social plan designed to transform China from rural economy to a modern and industrialized society, had a major effect. Furthermore, crop yields reached their lowest level, and birth rates were also down in the period 1959-1961. However, in 1963, Mao stepped down temporarily as chairman of the PRC (but maintained his post of Communist Party Chairman), seemingly taking complete responsibility for the Great Leap Forward Movement. On 15 September 1966 a preparatory committee of the Cultural Revolution was formed within FAW, and various aggressive political units were organised within the manufacturing structure. The educated engineers and intellectuals could not escape the gruesome aspects of the campaign launched by the extremists. Many innocent people were tortured and killed during the campaign, including the top management of FAW.

In May 1968, it was claimed that Zhao Xueyi, who held the highest position at FAW as general party secretary, was pro-capitalist and anti-revolutionary and opposed to the principle of the Cultural Revolution meaning that he was prosecuted, humiliated and tortured. Zhao, by the end of the ordeal, was both mentally and physically broken. Wang Shaolin, Deputy Director of FAW, was unfairly judged by the members of the Cultural Revolution unit within the factory and died after a cruel whipping and beating in September 1968. More than 3,500 factory workers were cross-examined about their political affiliation and persecuted in the same manner, among them 1,941 managers and

³¹ Zhang, Letian, *Renmin Gongshe Zhidu Yanjiu*, 人民公社制度研究, (*The Study on People's Commune*) (Shanghai: Shiji Chubun Jituan Faxing Zhongxin Faxing, 2005). Chapters 2-3, Page 12.

supervisors.³² The details of the political persecution are not a primary aspect of this research, but as a result of it the production level could not be maintained or recover even after the end of the Cultural Revolution. The Great Leap Forward Movement, the country's serious famine during 1958-1963, and the Cultural Revolution 1967-1976 correlate with sudden downturns in FAW's production, as shown in Figure 2.1. The increase in production after the Cultural Revolution was characterised by the quantity rather than the quality of production.

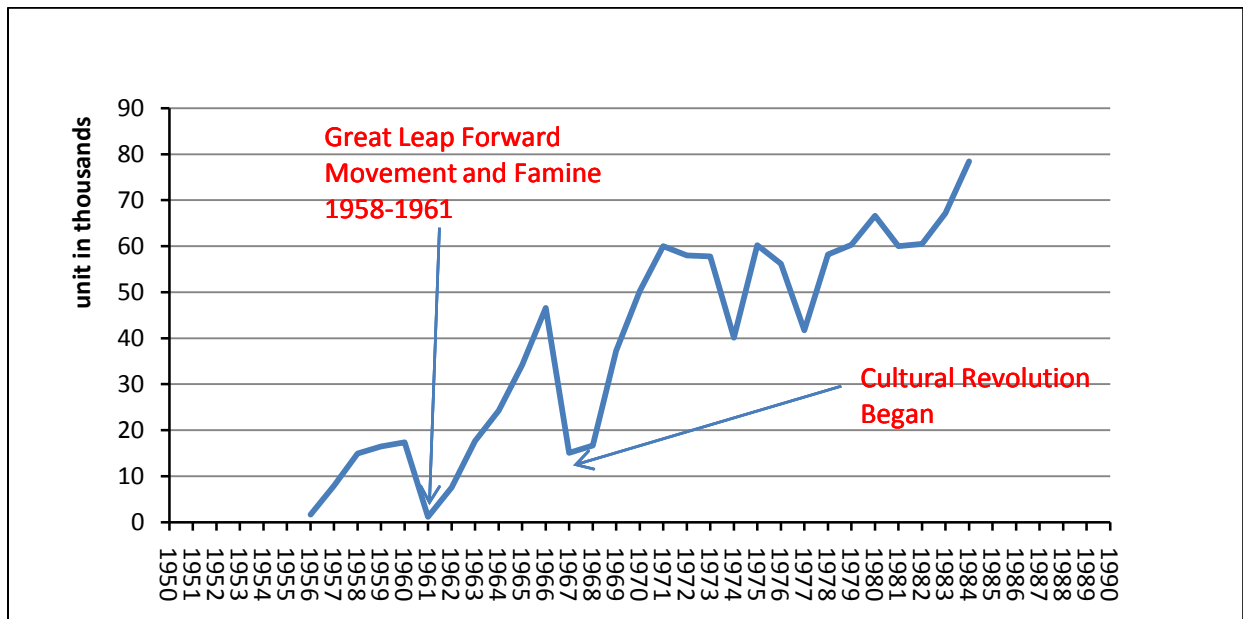


Figure 2. 1. FAW vehicle production,1956-1984³³

2.2 The failed expansion of FAW before 1984

³² Sun (ed.), *Di Yi Qiche Wushinian Dashiji, 1953-2003, 第一汽车五十年大事记 (Chronological Events of FAW, 1953-2003)*. Pages 57, 69 and 92.

³³ The author of this thesis has made Figure 2.1, based on the data from Ibid. Pages 27, 31, 37, 41, 45, 47, 50, 53, 57, 61, 65, 67, 68, 71, 73, 75, 77, 79, 81, 83, 87, 90, 96, 102, 106, 111, 116, 125, 135, 143, 151, 163, 171, 179, 185.

Despite the slowing in production, the State Economic and Planning Department began to establish other automobile factories because of the fear that FAW would come under attack during a possible war. In 1965, the site for SAW was re-suggested by a group of senior engineers from FAW at Shiyan village of Hubei Province in the central region of China. The factory was to be located in the northwest mountainous area of the Yunyang District which had a substantial power supply from the nearby Danjiang Kou Han River dam. The neighbouring mountain was a strategic position for national defence, and both the Jiangxi and Hubei Province railways pass through Shiyan and connect the two populous cities of Wuhan and Xiangfan, a short distance away. After all the strategic and economic conditions had met the guidelines set by the National Industrial Department in Beijing, Shiyan was finally chosen as the official site for SAW and was endorsed by Premier Zhou Enlai in 1968. However the political turmoil caused by the Cultural Revolution seriously affected internal operations and the construction of SAW. During the Cultural Revolution the protection of intellectuals was normally regarded as being 'pro-Russian revisionist' or 'capitalist' by the extreme left. For instance, the engineers sent from FAW to SAW had to take time off from their jobs and join the Cultural Revolution by attending various political discussions and meetings. One of the popular 'revolutionary' ideas of the Cultural Revolutionaries was to break up the conventional production process by applying learning, designing and manufacturing simultaneously. This practice excluded the participation of skilled professionals and even college graduates in engineering. To avoid individualism, skilled production jobs were reassigned and not necessarily to the most relevant workers.

What this entailed was that, in the construction of the assembly plant, the chief positions were not normally taken by professional civil engineers but by those individuals who possessed a strong political ideology. These laymen controlled the budget and the direction of the factory's construction, and in many instances they cut corners in building the factory in the name of saving costs, which created problems with the workers' environment and with production. For instance, the heating pipes and equipment were knocked down to prevent workers from wasting time warming themselves. But when the heater furnace was removed, the workers started to make fires within the plant to keep warm. The factory floor under the equipment was designed to be 75 cm of cement to hold the weight, but was replaced with a thickness of 25 cm. Soon afterwards, the plant's floor started to sink and crack, which made the manufacturing machines and equipment unusable. The worst cost-cutting measure was substituting the regular drainage pipe with a smaller size which caused the flooding of the entire Shiyan plant during a heavy rainy season in April 1973.

Due to the increasing emergence of anti-Soviet feelings, the mobilised Red Guard group challenged SAW for its use of a plant structure and pattern which had been built with Soviet help. They criticized FAW for only being capable of manufacturing a single vehicle model, a practice assumed no longer to be in China's best interests.³⁴ Rao Bing, the Chief Engineer of FAW and one of the first victims in the factory, was removed from his position by left-wing extremists as an 'anti-revolutionary' for his Soviet-educated

³⁴ Chen, Zutao, 'Dui Qiche Gongye Jishu Yinjin de Huigu, 对汽车工业技术引进的回顾 (Review of Importing Automobile Technology)', *Zhongguo Qiche Gongye de Yaolan, 中国汽车工业的摇篮 (The Cradle of the Chinese Automobile Industry)*; Changchun: First Auto Works, 1983, 36-41. Page 37. Chen was Director of the vehicle department of FAW and had worked for FAW in various jobs between 1951 and 1956. He was then transferred to Shiyan to help to build SAW.

background. Later the left-wing extremists took over the control of SAW and built 27 divisions within the factory intending to produce multiple models. This was done on purpose to make it distinctly different from FAW, which in their opinion, was a copy of Russian factories. In the worst year for SAW, when the factory's operation was at a standstill, the central government sent a military division to SAW to restore order. In 1970, SAW was ordered by the Beijing authorities to produce 500 vehicles as part of the state economic plan, and the target for 1971 was 3000 units. Knowing their inability to manufacture any vehicles, the managers of SAW assembled 20 trucks by putting together parts and hand-craft metal works. These vehicles were presented on National Day, 1 October 1971 for the twenty first anniversary of the PRC, and again they were merely symbolic. SAW sent a group of technicians with hand tools to stay by the vehicles along the route of the parade, in case any needed to be fixed if they broke down.³⁵ The building of SAW was so disorganised that there was no worthwhile production during the entire period of 1967 to 1976. Along with all other economic plans for major enterprises, SAW could not have escaped the fate of closure as a result of the famines caused by political movements within China. After the Cultural Revolution ended in 1976, Rao was called back to resume his previous position and charged with the re-construction of the plant. SAW gradually recovered and in July 1978, almost twenty years after the foundation of the FAW plant, the 5-ton truck model 'Jie Fang CA140' designed by FAW, was passed to SAW and put into production.

³⁵ ANON. Qiche Zhiyou, 2006, 'Erqi Lishi, 二汽历史 (A Memoirs of Building Second Auto Works, 2006)', <<http://bbs.autofan.com.cn/showtree.aspx?topicid=44414&postid=321774>>, accessed 5 June 2008.

Even before the beginning of the Cultural Revolution, the central government gave guidelines to all local governments to take a more aggressive approach to industrialise their own regions. Misled by activists on the extreme left, many believed that FAW had obtained technology from the Soviet Union; however, other major cities in China were still badly equipped and incapable of building trucks. In 1957 a modified factory in Nanjing copied the Russian 2 and 1/2 ton model ZIS 51, renaming it ‘Yaojin NJ130’ (or Leap Forward), and built a local automobile assembly plant. The following year the newly-established Shanghai Qiche Zhizhao Chang (Shanghai Automobile Assembly Plant) duplicated the chassis of a Polish passenger model and the engine of an American Plymouth, making a passenger car called ‘Fenghuang’ (or Phoenix). Imitating the German VW Beetle in 1958, the Beijing First Automotive Component Factory built a modified vehicle called ‘Jing Gang Shan’, the name reflecting a historical region in Jiangxi Province where Chinese Communists built their base. All these new factories were built between 1958 and 1968 during the periods of the ‘Great Leap Forward’ and the Cultural Revolution.³⁶ Between 1970 and 1971 more than 100 smaller machine plants started to buy engines from FAW and built chassis and body parts around them, calling themselves automobile factories. Each factory used traditional craft production to make its own style of truck models and the yearly production volume was typically only a few hundred or even less. The proliferation of this phenomenon across the country did not

³⁶ Feng, Zhipei, Liu Zhiying, Dong Xiaoyan *Zhongguo Jiaochē Chānyè Fāzhǎn*, 中国轿车产业发展, *Development of Chinese Passenger Car Industry* (Hefei, Anhui: Hefei Gongye Daxue Chubān She, 2005). Page 22.

stop even after the end of the Cultural Revolution and by 1980 the number of automobile factories in China, mostly in very small scale, had reached almost 2,000.³⁷

Chinese political leaders played a leading role in the building of the automobile industry. Deng Xiaoping, for instance, was an influential politician and economic reformer who barely survived the political suppression of the Cultural Revolution but who had managed to return to power, and laid out new guidelines to streamline the dispersed and scattered automobile factories. Deng had earlier engaged in part-time study and part-time work at the Renault automobile factory in Paris as a fitter in the 1920's, and he took an active interest in China's indigenous automobile industry. He strongly believed that China should not have so many 'small and all-inclusive' automobile factories and that a complete overhaul and merger ought to be carried out to increase the efficiency of automobile production.

In the late 1980s, as Deng resumed his State Council Vice-Chairmanship, he did not openly advocate the market economy. But through the establishment of the Central Economic System Reform Committee, he was determined to abolish the bad practices that had been set in place through economic plans. Under his direction, several measures were adopted as experiments to recover the efficiency of manufacturing production. First, he relieved the Automobile Board of the First Engineering Division of the National Industrial Department of its responsibility to supervise various automobile factories in the country. Instead, he suggested replacing the Automobile Board with a brand new State Enterprise, called 'Zhongguo Qiche Gongye Zong Gongsi' (China Automobile Industry

³⁷ *Ibid.*, Pages 23-24.

Company, CAIC), to control the manufacturing of vehicles and components. Under the direction of the CAIC board, the general manager would be held responsible for the factory's planning, product development, positioning of its affiliated component supplier, technological and economic policies, and investment strategy. It was intended that CAIC would use a general manager responsibility system to commission factory directors to apply economic principles and a professional approach, instead of the system used in the centralised planned economy which China had duplicated from the Soviet Union in the early 1950s.

The second major impact Deng had on China's automobile industry was that he laid out guidelines to introduce the foreign auto powers into China and build JVs to bridge the gap between Chinese and overseas technology. After retiring from the Chief Directorship of FAW and SAW, Rao Bing was re-appointed as the chief of the First Engineering Division of the State Industry Department. In 1978, he jointly proposed with the Shanghai Vice-mayor Chen Jinhua a feasibility study of either purchasing or outsourcing automotive technology from the major foreign automakers. In his proposal he stressed that by doing this China could streamline numerous small modified factories and build passenger vehicles in the Shanghai metropolitan area, the most commercial region in China, in order to meet the increasing demand expected as a result of China's decision to establish a market economy. Li Xiannian, then Vice-Chairman of the State Council, approved the proposal with the endorsement of Deng Xiaoping, who agreed to obtain the technology for both passenger cars and heavy duty cargo vehicles.³⁸ The

³⁸ Rao, Da, 2004 'Rao Bin he Shanghai Qiche Gongye, 饶斌和中国汽车工业, Rao Bin and Shanghai Automobile Industry', *Qiche Shidai, Auto Time* 25, 27-42.

implementation task was assigned to Yu Qiuli, then Vice Premier, and the Shanghai factory became the third major Chinese automobile factory after FAW and SAW, and was later called SAIC as mentioned in Chapter 1.

The First Engineering Division of Heavy Industry Department therefore sent out invitations to major global automakers such as General Motors (GM), Ford, Toyota, Nissan, Renault, Peugeot, Mercedes-Benz, and VW, hoping to build business ventures with them and then to access their automotive technology. Japan's Toyota diplomatically declined the invitation on the grounds that they were negotiating with a Taiwanese automobile factory for a JV to produce 300,000 units for the Taiwan market. Germany's Mercedes-Benz also rejected the idea, claiming that the technology was not for sale. However with the exceptions of these two companies, the other car makers that received the invitation responded positively. In October 1978, GM first sent a delegation, including its CEO Thomas A. Murphy, to China to explore possible business opportunities in the areas of passenger vehicles and heavy duty trucks. At a meeting with the Chinese State Department and the First Engineering Division, Murphy suggested, rather than just the introduction of GM's technology, a partnership between GM and a Chinese company to jointly develop the automobile industry and market in China. Ironically the Chinese delegation was unsure and even unaware of the definition of the term 'JV' which, at the time of their meeting with GM, was an entirely new concept to the Communist ideology. The head of the delegation, Rao Bing, recollected in his memoir that the Chinese delegation seemingly understood the words of 'JV' to mean that two partners were to mutually share the risk, but was ignorant of the details of how a JV

would work.³⁹ Murphy used GM's JV in Yugoslavia as an example to further convince the Chinese of the advantages of the partnership, which he presented as a 'marriage' between two firms. Thanks to the liberal ideas disseminated during the Third Session of the Eleventh Central Committee of the Party and to Deng's support, the Chinese delegation accepted Murphy's proposal immediately. However, Murphy could not get his proposal approved at the GM board meeting after his return to the USA. This ended the first round of China's preliminary contact with foreign automobile companies.

At this time, many foreign firms which had received invitations sent their investigation teams to China for initial feasibility studies. However, most of them concluded that China did not have enough income per capita, automotive component supplier chains or the capital necessary to support a well-ordered automobile market. The only exception was Germany's VW which showed a great interest in the market and carried on a lengthy negotiation with the Chinese government. Considering Asia as a key part of its global strategic market, VW sent a team to China with a mission: to build an additional market in China in order to save its Asian market share from Japanese competition. In the early 1970's VW withdrew its popular but outdated 'Beetle' model from the USA, and moved its plant to Mexico in search of better opportunities in the South American market. As a result of the sudden global oil crisis in 1974, consumers in the USA began to sense the shortcomings of lavish models made by American automakers. The efficient production and models of the Japanese automakers soon filled the gap in the import market left by

³⁹ *Ibid.*, Pages 27-42.

VW, making Japan one of the primary smaller engine vehicle providers from overseas.⁴⁰

In the same period VW approached South Korea to explore business opportunities there, but soon gave up the plan after finding an unacceptable and difficult political environment for foreign automobile companies in South Korea despite its relatively good industrial foundation. However, VW found it quite difficult to develop its business in China for three key reasons. First, the automobile industry was still in its infancy, and it would take time and capital to build the necessary component supplier chains; second, China was a socialist country with a legal system that gave no protection to corporations; and third, there was no market for individual purchase in China because the private ownership of passenger vehicles was still prohibited.

Among all the concerns in the Sino-German preliminary talks the major one was the uncertainty as to how cooperation between the two countries could work. From the Chinese side of the negotiation table, China wanted to build a modern automobile factory with foreign technology but did not want to lose management control, fearing foreign powers might use their economic power for political gain as had happened in China in the nineteenth century. There was also concern that the left-wing political movement of the Cultural Revolution might return unpredictably, making any venture with foreign companies a political risk. On the German side, VW wanted to build its market base in Asia but did not want to be trapped in a socialist environment without the guarantee and legal protection from the Chinese government. China decided to start a JV factory with a low level of production and so allowed VW's 'Santana' model (Passat B2) to be

⁴⁰ Womack, James P., Daniel T. Jones and Daniel Roos, *The Machine that Changed the World* (New York: Maxwell Macmillan International 1990). Pages 68-69.

imported and the Complete Knock Down (CKD) system, an easy and expedient way to assemble a complete vehicle kit in Shanghai. The initial intended production was 20,000 units against the 150,000 units originally expected by VW. The negotiations between China and Germany on this project carried on for six years, from 1978 to 1984, and finally a JV with 50 percent ownership for each country was formed in Shanghai. This was called the Shanghai VW Automobile Corporation Ltd. Each party invested 160 million RMB (approximately USD \$20,000,000) in a contract with a term of 25 years until 2009 with an option to renew after that date.⁴¹ The signing of the formal contract on 10 October 1984 was attended by both Chinese State Council Premier Li Peng and German Chancellor Helmut Kohl. The following September, the 1.6 litres four cylinder model 'Santana' was put into production and became the first vehicle produced by a Sino-foreign JV.

This thesis is focused on the Chinese indigenous automobile industry and not on Chinese automobile companies with foreign capital. However, an explanation of what happened in the period 1978-1984 is necessary because during this period the Chinese government changed its agenda from developing its automobile industry through relying on foreign companies' capital and technology to instead forming JVs with foreign companies, to which they had been strongly opposed in the 1960s and 1970s. 1984 is the dividing year when China revised its policy in order to embrace foreign investment, with 50 percent Chinese ownership as a minimum protection for Chinese participation. Before 1984 the Chinese automobile industry was primitive and exposed to numerous political

⁴¹ The JV contract was renewed for another twenty years on 13 April 2002, eight years before the expiration of the original contract was due in 2010. Both parties have increased their capital investment six times and the new contract now expires in 2030.

disturbances. Its production was low and quality was poor; however, it was not involved with any foreign companies. After 1984 and the VW deal, Chinese automakers began negotiating various JVs with global automakers. It was the first time that the Chinese government had seriously engaged in the mass production of passenger cars. In the next chapter (Chapter 3) the second stage of the history of the Chinese automobile industry (1985-1997) will be discussed, focusing on several topics, including the shaping of government guidelines, perception and policies, the positioning of global automakers in China, and the formation of major Chinese automakers and their efforts to produce cars on their own.

2.3 Making trucks only

When China started its automobile industry in its first Five-year Economic State Plan in 1950, the building of a truck factory with Soviet assistance seemed to be its only option. In the three decades from 1956 to 1986, FAW produced more than one million units of the truck ‘Jie Fang CA-10’ in various body styles, with the same Russian ZIS-150 engine and transmission. The four-ton, six-cylinder trucks with 90 horse power were produced for carrying cargo, military transportation, and various industrial applications for thirty years without major modifications or improvements in engine performance. As a result of poor sales in the last few years of its production in the early 1980s, however, hundreds of thousands of the ‘Jie Fang’ model trucks were lined up in the parking lot in the city of Changchun where the vehicles were produced. When the second generation of the model ‘Jie Fang CA-141’ made its debut in 1986, replacing the earliest and the oldest ‘Jie Fang CA-10’ in China, it symbolised the end of the era of the truck. At the same time, it

signalled the beginning of the new development of FAW, which had just entered into JVs with the global automakers in marketing commercial and passenger vehicles for the market economy.

The inexperience in producing passenger cars by FAW was an embarrassing void. The Beijing government ordered FAW to manufacture a limousine-style passenger vehicle to be used in the parade on the tenth Chinese National Day on 1st October 1959. The creation of such a show in Tiananmen Square in Beijing for this occasion was intended to publicise that China was capable of making vehicles completely on its own, but this was a symbolic rather than a technical achievement. Given such short notice, FAW had to resort to the adoption and modification of Chrysler's model 'Fair Wind'. Using hand craftsmanship to form a new limousine body style, 33 units of a Chinese passenger car named 'Hongqi CA72' with a Chrysler engine and transmission were presented in the marching parade of the PRC's tenth birthday. When China's Second Five-year Economic Plan (1958-1963) merged with the domestic mass movement the 'Great Leap Forward', FAW's regular production was occasionally affected by the unstable political mood. The model 'Hongqi CA72' was actually labelled with an emblem of three red flags on the rear side of the wing of the car, corresponding with Mao Zedong's current political slogan 'Sanmian Hongqi' or 'Three Red Flags' representing: the General Direction, the Great Leap Forward and the People's Commune.

FAW's passenger car 'Hongqi' was a long, heavy, inefficient car that consumed a great deal of petrol, and was used exclusively for the nation's major national events and occasions to receive state guests. In 1973 when President Nixon visited China to rebuild

the broken relationship with the USA, the American delegation requested permission to bring their American-made vehicles to use during their stay in China. This request was rejected by Premier Zhou Enlai who insisted they use FAW's 'Hongqi' with its three-row of seats in an extended body style. Since 1958, it had become a tradition that 'Hongqi' was used when key politicians visited China. It was generally acknowledged that being received and escorted in the car model 'Hongqi', staying at one of the most prestigious hotels Diaoyu Tai (or Diaoyu Island), and meetings with Chairman Mao in person were considered three of the most special honours offered by the Chinese government in the 1960s and 1970s. During the next two decades, 'Hongqi' adopted different versions of engines from America and Germany, but the total production number of 'Hongqi' never exceeded 2,000 units. FAW produced other commercial models in later periods in JVs with foreign companies such as VW and Toyota, but Hongqi never became a mass produced commercial model, remaining a purely iconic vehicle. When China opened its doors to economic reform at the beginning of the 1980s, Hongqi was finally re-evaluated due to its high cost, the low quantity produced and inefficiency in construction. Its production was terminated in 1985. The quantity of Hongqi produced was so limited that it accounted for less than 1 percent of thirty years worth of total vehicle production. Table 2.2 below illustrates the combined numbers of passenger cars and trucks produced in the period 1956-1984 and depicts FAW's monotonous routine of building trucks. In 1991 'Hongqi' was redesigned by the new, modern FAW with a completely new engine and body style. FAW's re-designed the new Hongqi model in the third phase (2001-2007) for the commercial market, rather than just privileged government officials as in the past three decades. This will be discussed,

together with the self-developed models produced by the state-supported six companies, in Section 3.5 of Chapter 3.

Table 2. 2. FAW's combined production of passenger cars and trucks, 1956-1984⁴²

Year	Vehicle produced	Passenger car	Trucks and military vehicles
1956	1654	0	1654
1957	7904	0	7904
1958	14922	0	14922
1959	16469	47	16422
1960	17386	0	17386
1961	1146	1	1145
1962	7603	6	7597
1963	17665	0	17665
1964	24251	30	24221
1965	34155	30	34125
1966	46605	82	46523
1967	15068	33	15035
1968	16698	22	16676
1969	37267	25	37242
1970	50302	40	50262
1971	60010	102	59908
1972	58005	130	57875
1973	57800	130	57670
1974	40101	151	39950
1975	60205	154	60051
1976	56200	100	56100
1977	41684	81	41603
1978	58227	82	58145
1979	60300	133	60167
1980	66600	60	66540
1981	60002	45	59957
1982	60507	30	60477
1983	67200	152	67048
1984	78416	191	78225
Total	1134352	1857	1132495

⁴² The author of this thesis has made Table 2.2, based on the data from Sun (ed.), *Diyi Qiche Wushinian Dashiji, 1953-2003*, 第一汽车五十年大事记 (*Chronological Events of FAW, 1953-2003*).

Entering the 1980's with an open economic environment in China, FAW's CA10 was almost 30 years old and had become outdated due to its less powerful and inefficient engine. The call for new technology and truck models to meet market demand became imperative. Earlier, in May 1978, FAW sent an investigation and observation team, including the then FAW Factory Director Liu Shouhua, to Japan's Mitsubishi Motors, Isuzu, Nissan and Hino with hopes of replacing the obsolete Russian automotive technology. This six-month learning tour opened FAW management the possibility to internal reform and renovation. Upon their return, they immediately compiled and edited a set of teaching materials and management manuals to be distributed within the factory and to SAW. In May 1980 FAW further established the Changchun Automobile Research Institute as a new platform to design engines and automotive components. Within a year and a half the research centre had designed a completely new engine called CA-6102 for the CA-141, the replacement for the aged CA-10. The prototype was more efficient than its forerunner by torque, horse power and fuel consumption as illustrated in the comparison in Table 2.3. The real production of the engine CA-6102 went through internal quality and road tests in December 1981 and obtained final approval from the State Economic and Development Committee, the Department of Transportation, and China Automobile Corporation of the Department of State Engineering jointly in September 1983 as the official replacement for FAW's long-lived model CA-10. However, it took more than three decades, between 1956 and 1987, for FAW to develop this slightly improved model CA-141. As also illustrated in Table 2.3, the horse power of the CA-141 was 130, compared to the 90 of the old CA-10. CA-141 was the only new model produced by FAW, which showed China failing to keep pace with the rapid

growth of its neighbouring countries such as Japan, which grew from nothing to 58 models between 1955 and 1989.⁴³

Table 2. 3. Specification comparison of old and new Jie Fang for engine models CA-10 and CA-141⁴⁴

Specification comparison of Old and New Jie Fang	CA-10	CA-141
Horsepower	90	130
Maximum speed (in km/hour)	65	90
Tare weight (in kilo)	3900	4100
Cargo weight (in kilo)	4000	5000
Cylinder	6	6
First production year	1956	1987

However, the production of the new CA-141 was delayed due to the overstocked inventory of the old model CA-10 and FAW's re-styled CA-15, which was planned for a reduced production.⁴⁵ FAW was unsure that the new CA-141 would survive the market to replace the CA-10 or CA-15, so it sent the trial model to the Japanese truck maker, Hino, for road tests to eliminate safety and engine problems. After six years of engine design, modification of components surrounding the engine group, body panel styling and a number of further inspections and tests, the new CA-141 truck was finally put into

⁴³ Womack, *The Machine that Changed the World*. Page 125.

⁴⁴ The table is made based on the data sheet of CA- 141 and CA-10 in FAW's web link. For CA-10:Sun (ed.), *Di Yi Qiche Wushinian Dashiji, 1953-2003, 第一汽车五十年大事记 (Chronological Events of FAW, 1953-2003)*. For CA-141: ANON., 2003, 'Yiqi Jiefang Qiche Youxian Gongsi, 一汽解放汽车有限公司 FAW Jiefang Automotive Company', <<http://www.fawjiefang.com.cn/product1.jsp?m=2>>, accessed 29 April 2009.

⁴⁵ Sun (ed.), *Di Yi Qiche Wushinian Dashiji, 1953-2003, 第一汽车五十年大事记 (Chronological Events of FAW, 1953-2003)*. Page 146.

production on 1 January 1987, ending an era for the outdated CA-10 and CA-15, and marked a new beginning for the Chinese automobile industry.

FAW in its advertisements called itself the ‘cradle’ of the Chinese automobile industry, referring only to its production of trucks. Since the 1990’s it has evolved into a huge state conglomerate in the automobile business, and has lost its indigenouness, no longer producing entirely Chinese models on its own as it did in the early period (1956-1984). The next chapter (Chapter 3) will examine how the general Chinese automobile industry responded to the new economic situation and positioned itself in the domestic market, when China opened its doors to the consumer market for passenger cars.

Chapter 3: The Chinese Automobile Industry's Development Under Protectionism, 1985-1997

This chapter examines the second phase of the general development of the Chinese automobile industry. During the twelve year period between 1985 and 1997, China's openness made it easier for foreign automakers to enter China with their venture opportunities and the government responded by forming a policy to deal with the automotive industry. Internally, the fast economic pace created a vast demand for passenger vehicles and caused serious malpractice such as official corruption and smuggling. The government counter-measures which followed including reducing the duties on imported vehicles and introducing more practical policies to streamline the scattered domestic automobile factories within China. Externally, flourishing global automakers faced an enticing and expanding market which offered relatively higher profits. Internally the government needed to change its regulatory environment to meet international rules to welcome foreign companies and at the same time protect its own industry. The answer was more JVs between major foreign automakers and Chinese government selected and designated state enterprises.

3.1 Bureaucratic smuggling of imported Cars, 1980s -1990s

With the implementation of the open door policy in the 1980s, Shenzhen, a city in the southern province of Guangdong, became the first free-trade economic zone. To help the development of Shenzhen, the Chinese government established another outlet on Hainan

Island, approximately 50 miles off shore, which served as an isolated duty free zone just for automobiles. Supposedly, all the cars imported into this special zone were for use on the island only. The local government, however, ignored the smuggling of cars from the island to the mainland, under the pretence of supporting the local economy. A modified automobile company, named Hainan Automobile Manufacturing, was created to cover up the illegal activity in order to fulfil the immense demand across the entire country.

During the second half of 1984, the central government in Beijing approved a small quota for Hainan Island to import passenger cars for local use without paying import duties. This gave government agencies a chance to acquire foreign-made vehicles from Hainan Island by paying a small premium, normally a few thousand RMB (a few hundred US dollars), for any model. Compared to the high duties levied on imported vehicles, this was a bargain. The central government realised that the demand for automobiles would have to be met somehow without levying too much tax on local governments which already had limited budgets. So it closed its eyes to the semi-official smuggling of cars until some of the government agencies began to take too much advantage by buying cars and re-selling them to private parties or other less privileged local government agencies for a large profit, sometimes doubling the original price.

The trading of illegally imported cars soon spread to neighbouring cities using Hong Kong and Macau as transfer depots. These two international territories on the eastern side of the Zhu Jiang (Pearl River) Delta in Guangzhou Province were at that time designated free-trade zones. Along with the southern cities of Shenzhen, Hainan Island and

Guangzhou, the northern city of Tianjin had also become notorious for the importing of cars, oil and cigarettes.

As the government officially prohibited unregistered vehicles, groups of smugglers found different ways to 'legalise' their merchandise. Vehicles were dismantled down to their component parts, such as doors, tyres, seats, roofs, chasses, and engines, which were then marked for reassembly before being loaded into ocean containers and imported as parts from nearby countries or sea ports. One of the most common methods used by the smugglers was to find a car similar to the car they intended to bring in, record its license plate number and vehicle identification number from the dashboard under the windshield, and apply the stolen numbers and a fabricated license plate to the smuggled vehicle. The smuggled car would then be sold to a remote area. Since the original vehicle already had a legitimate license and registration, the smuggled car with the fake identity would be even easier to sell for no additional cost. These 'cloned' vehicles were very difficult to trace and monitor as they were sent to far-flung corners of China's vast territory.

The second type of corruption found in the 1980s and early 1990s was the collaboration between criminal groups and the customs agency. The smugglers would normally tip off the customs authorities in advance and customs officers would seize and capture their merchandise, but not arrest the men. As the customs agency eventually auctioned off the confiscated vehicles, the criminal group could then buy them at a very low price from the auction and 'legalise' the registration of the smuggled vehicles. It is estimated that the

illicit entry of vehicles throughout these years was double the number of vehicles that entered legally.⁴⁶

A third malpractice was to bring in passenger cars semi-officially through a way similar to CKD assembly. The CKD method is to break down a vehicle into several sections, such as engine, chassis and body and body panels and then re-assemble these sections when they arrive at their destination. The imported components enjoyed a lower tariff of between 25 percent and 30 percent, whereas complete vehicles were taxed at a much higher rate (normally between 80 percent and 150 percent). After paying the duties and buying an illegally registered license, the importer re-assembled the vehicle with various module parts and proceeded to sell the vehicle for a lucrative profit. Certain multinational car companies copied this method in the later period of 2001-2004 when China became a WTO member and the general tariff was reduced. By doing this they could simply bring car components to China for assembly and did not have to manufacture parts in China, which involved additional cost and management. In 2004, the Chinese government raised the import duty for CKD assembly to discourage foreign companies from making the core components overseas rather than in China.

As the smuggling activities had become unbearable and so much duty revenue had been lost, the government decided that, in addition to the countermeasures taken against

⁴⁶ ANON., 2007, *Zhongguo Jingji Wang 'Zhongguo Qiche Fengyun Lu, 中国汽车风云录*, (The archives of Chinese Automobile Industry)', <http://book.ce.cn/read/biography/qcfzlsf/03/200712/19/t20071219_13974466.shtml>, accessed 8 August 2008 ANON, 2006, 'Dongfeng Yadao Xifeng, Haishi Xifeng Yadao Dongfeng? Dui Dongfeng Qiche Gaige Kaifang Lichen he Weilai Fazhan Zhannue de Sikao, 东风压倒西风, 还是西风压倒东风? 对东风汽车改革开放历程和未来发展战略的思考 (East or West? Thoughts on DMC's Reform, Future Development and Expansion Strategy)', <<http://bbs2.people.com.cn/bbs/ReadFile?whichfile=12416832&typeid=14>>, accessed 10 August 2009.

criminal activities, it would reduce the import tariff as a corrective measure to make illegal entry of cars unprofitable.⁴⁷ Figure 3.1 shows that in 1986 import duties were almost 220 percent of the cost of a car. Import duties fell to between 110 percent and 150 percent in 1994 and dropped further to approximately between 70 and 80 percent in 2001 as China became a member of WTO. By the end of 2006, import duties had plunged to 25 percent.

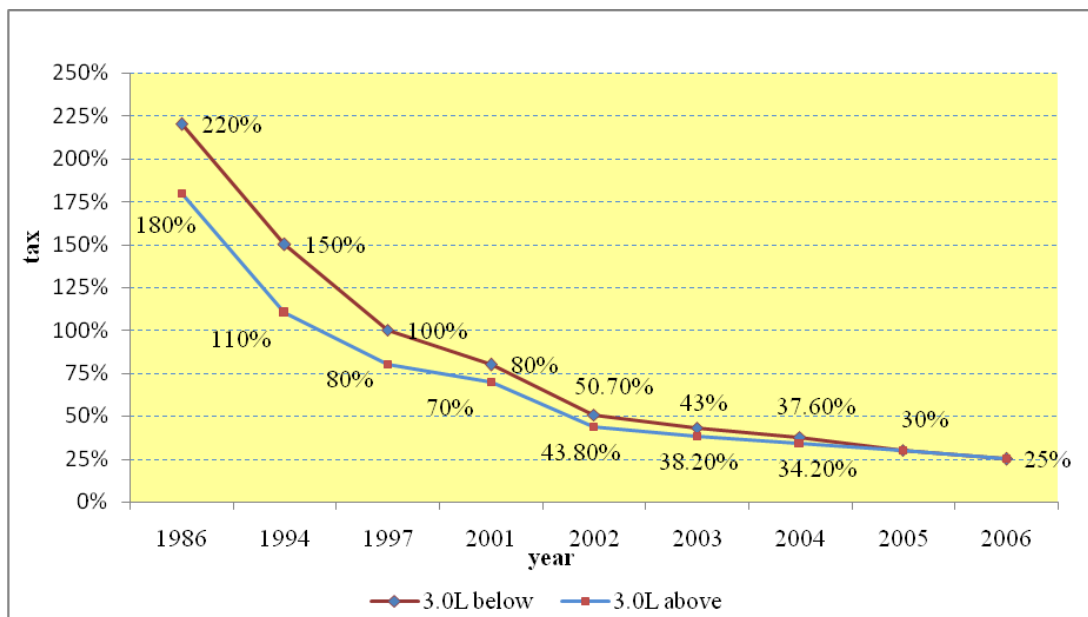


Figure 3. 1. Tax rate change in the Chinese automobile industry, 1986-2006⁴⁸

⁴⁷ In July 1998, the Chinese Communist Party State Secretary Jiang Zemin held a series of meetings to strike against the smuggling and the illegal imported vehicles.

⁴⁸ The author of this thesis has made this Figure, based on the duties on import vehicles from 1986 to 2006. Taigu Government Official web link. ANON., 2006, 'Qiyue qi Bufen Jinkou Che Guanshui Jiangzhi 25, 7 月起部分进口车关税降至 25 (Imported Vehicle Duties reduced to 25% From July 2007)', <<http://www.taigu.gov.cn/newsshow.asp?id=47359&cateid=369367&nid=232381>>, accessed 16 June 2009.

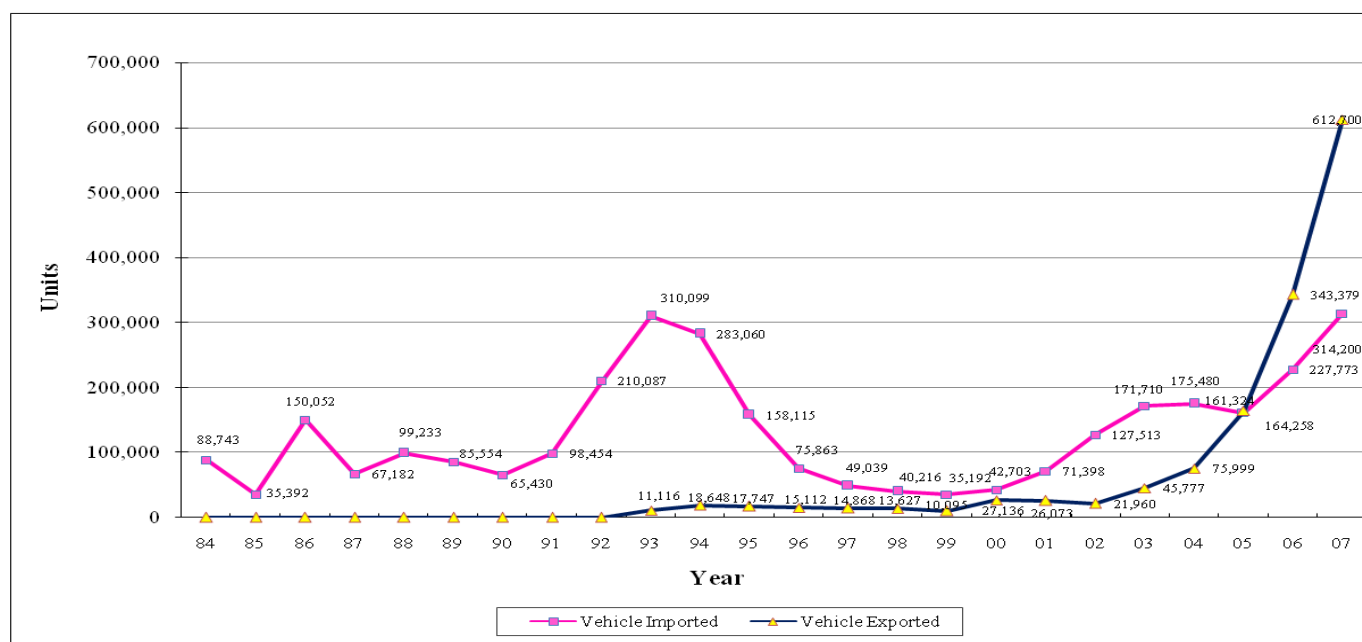


Figure 3. 2. The level of vehicle imports and exports in China, 1984-2007⁴⁹

In Figure 3.2 it is noticeable that the figures for smuggled cars were mixed in with the figures for legal imports, which reached their highest in 1993, and slowed down from 1994 onwards. The government, under Premier Zhu Rongji's command, took a stricter policy against smuggling and simultaneously reduced duties for imports. A significant decrease in the period 1997-2001 reflected this. Imports surged again in 2001, and this was attributed to the further reduction of the import duties, as a result of China's entry into the WTO. As illustrated in Table 3.1, the export of both vehicle and components were on the rise after 2001 as China became a member of the WTO. Of particular note,

⁴⁹ Zhongguo Jingji Nianjin She (ed.), *Zhongguo Jingji Nianjian 2007*, 中国经济年鉴 2007 (*Almanac of China's Economy 2007*) (Beijing: Zhongguo Guojia Tongji Shuju Ku, Guojia Tongji Ju, 2007). Page 283; Zhongguo Jingji Nianjin She (ed.), *Zhongguo Jingji Nianjian 2008*, 中国经济年鉴 2008 (*Almanac of China's Economy 2008*) (Beijing: Zhongguo Guojia Tongji Shuju Ku, Guojia Tongji Ju, 2008). Page 295.

China's export of vehicles exceeded those of imports for the first time in 2006 and in 2007 the export figure doubled, reaching a value of 36.8 billion RMB (or approximately US\$ 5.3 billion).

Table 3.1. The number and sales value of automobile and component imports and exports in China, 1984-2007⁵⁰

Year	Vehicle importation/unit	Vehicle exportation/unit	Automobile product importation/ in million RMBs	Automobile product exportation/ in million RMBs	Auto parts importation/ in million RMBs	Auto parts exportation/ in million RMBs
1984	88,743	—	1,048.21	—	166.51	—
1985	35,392	—	2,936.89	—	288.48	—
1986	150,052	—	1,954.59	—	277.08	—
1987	67,182	—	1,214.31	—	418.85	—
1988	99,233	—	1,612.40	—	339.13	—
1989	85,554	—	1,327.32	—	347.50	—
1990	65,430	—	1,202.93	—	347.40	—
1991	98,454	—	1,659.92	—	582.63	—
1992	210,087	—	3,535.23	—	870.71	—
1993	310,099	11,116	5,351.43	424.22	970.65	171.65
1994	283,060	18,648	4,714.82	515.20	687.94	245.80
1995	158,115	17,747	2,575.49	721.38	854.69	376.09
1996	75,863	15,112	2,500.18	816.50	1,077.57	382.07
1997	49,039	14,868	2,078.21	987.84	928.00	447.18
1998	40,216	13,627	2,057.89	883.43	804.92	489.60
1999	35,192	10,095	2,580.18	1,187.27	1,004.25	706.89
2000	42,703	27,136	4,047.50	2,478.54	2,112.81	1,125.40
2001	71,398	26,073	4,703.26	2,712.27	2,617.67	1,632.15
2002	127,513	21,960	6,599.85	3,358.90	2,312.36	1,661.34
2003	171,710	45,777	14,839.64	8,026.42	7,384.30	5,420.35
2004	175,480	75,999	16,860.01	12,419.12	8,679.60	7,946.03
2005	161,324	164,258	15,433.92	16,770.28	7,684.94	9,889.49
2006	227,773	343,379	21,274.10	28,909.61	10,525.19	19,248.37
2007	314,200	612,700	25,966.00	36,809.00	15,286.00	29,497.00

As can be seen in Figure 3.3 below, imported passenger cars dominated the market during the 1950s due to the lack of passenger car production by Chinese automakers. The second peak during the 1980s was attributable to Chinese economic reform, when

⁵⁰ *Ibid.*, 2007, Page 283 and Zhongguo Qiche Gongye Xiehui (ed.), *Zhongguo Qiche Gongye Niandu Baogao 2008*, 中国汽车工业年度报告 2008, *Annual Report on Automotive Industry in China 2008* (Beijing: Huaqing Zhijian Shudian, 2008). Page 295.

the demand for passenger vehicles suddenly rose. However, following the more stringent control of the illegal imports and the reduction in import tariffs, the illegal smuggling imports of vehicles gradually declined towards the end of the 1980s. The market share of imported vehicle fell from 78.40 percent in the 1950s to 3.24 percent in the 2000s, as the demand was increasingly met by China's domestic production and smuggling activities were drastically curbed.

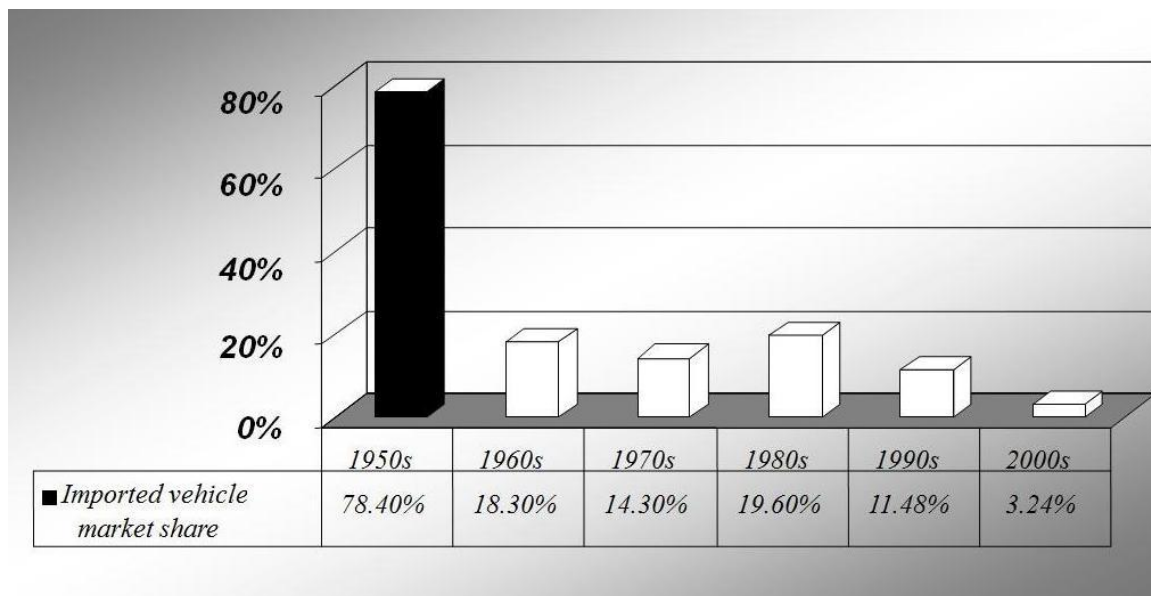


Figure 3. 3. The imported vehicle market share in China,1950s-2000s⁵¹

As the smaller cars made by Japanese automakers were more economical, most passenger cars imported via normal channels were Japanese made, reaching 30,000 units in 1998. As illustrated in Figure 3.4, Japanese imports exceeded those from Korea, Germany and

⁵¹ Zhongguo Jingji Nianjin She (ed.), *Zhongguo Jingji Nianjian 2007*, 中国经济年鉴 2007 (Almanac of China's Economy 2007). Page 283.

the USA, but the number of smuggled cars was estimated to be double the number of legally imported units.⁵² In Figure 3.5, we can see that the number of imported vehicles started to increase in 1992 as import duties fell and domestic demand increased, then went down after 1995 as imported vehicles gradually were replaced by China's domestic production of JVs.

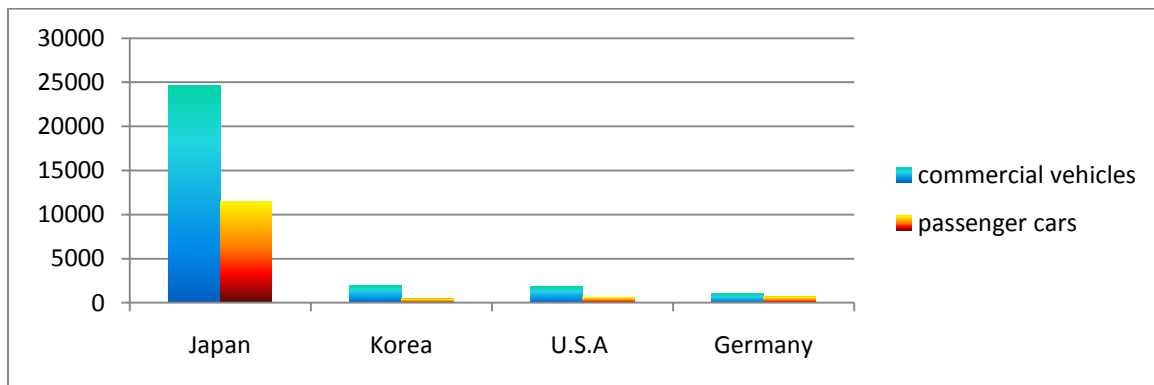


Figure 3. 4. The main countries of origin of imported vehicles into China, 1990s⁵³

⁵² *Beijing Jingji Ribao*, Oct 1991, Economic Daily News (ed.), *Zhongguo Qiche Maoyi Zhinan*, 中国汽车贸易指南, *China Automobile Trade Guide*. Page 16; Zhongjing Fenxi Xiaozu, 1998, '1998 Jinkou Qiche Qingkuang Fenxi he 1999 Jinkou Qiche Shichang Yuce, 1998 年进口汽车情况分析和 1999 年进口汽车市场预测 (1998 Automobile Import Analysis and Forecast for 1999) ', <<http://www.js.cei.gov.cn/zhjj/text/analysis/ZBA/ZBA52101.TXT>>, accessed 25 June 2008.

⁵³ *Ibid.*

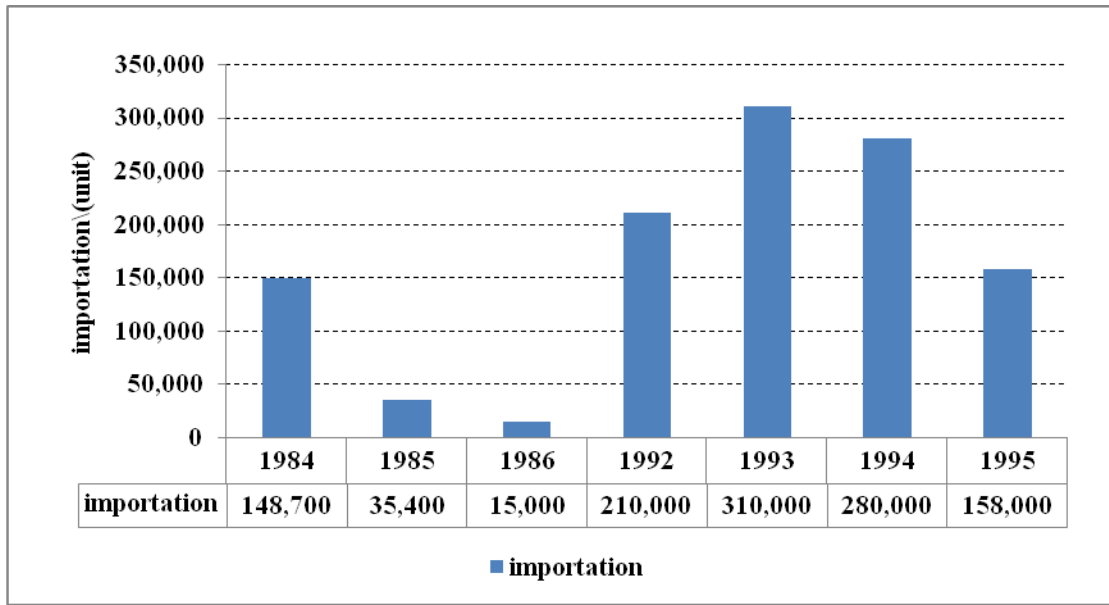


Figure 3. 5. Units of imported automobiles in China,1984-1995⁵⁴

3.2 Shaping of government guidelines and policies: 1953-1984;

1984-1997; 1997-2004

3.2.1. Government guidelines, 1953-1984

It is safe to say that before 1994 there was no automobile policy in China, only guidelines. In April 1986, the manufacturing of automobiles was first included as one of the ‘pillar’ industries in the Chinese government’s the seventh Five-year State Economic Plan (1986-1990). The government guidelines only stipulated that the automobile

⁵⁴ Zhongguo Qiche Gongye Xiehui Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2007, 中国汽车工业年鉴2007(China Automotive Industry Yearbook 2007)* (Tianjin: Zhongguo Qiche Gongye Nianjian Qikan She, 2007). P.283.

industry must begin with higher entry requirements, professional development, and production with economies of scale. It further nominated FAW and DMC as two starting bases for automobile manufacturing and one base in Jina in Shandong Province for building heavy trucks. The Chinese economic strategy of ‘trading market for technology’ had taken shape within the Chinese automobile industry. Following this strategy, the government pushed the merger of smaller provincial component companies through JVs. The gradual integration of the auto components industry was therefore a natural consequence of the formation of JVs. From the perspective of development it did create an effect of the promotion of centralised production and increased product quality. The relationship between the merger of the automotive industry and the development of automobile products is similar to the relationship between engineering production and engineering design. Given the same equipment and technological standards, any auto factory can produce the same product as long as the blueprint is the same. However, the same product could never be produced by two different engineers with differing designs. From the perspective of technological capacity, the merger of the auto components industry was not equal to the development of automobile products. On the one hand, the Chinese government saw it as a good opportunity to provide jobs, as the component factories were heavily linked with automobile manufacturing. On the other hand, since the components were made with the designs and blueprints provided by foreign partners, a technological dependence on foreign partners by Chinese automakers became unavoidable.

3.2.2. Introduction of foreign capital and investment, 1984-1997

China's Open Door Policy in the 1980s did not have any immediate effect on the automobile industry. The first obstacle was that China had been falling behind with regard to the automotive technology of the large car manufacturing companies in the USA, Germany and Japan. For instance, while Western and Japanese cars had already started to use the fuel injection system in the air/petrol mix for electronic control of combustion, most cars in China in the early 1980s were still using carburetion systems which depended on mechanical adjustments and controls, and which required continual tuning by experienced workers. Similarly, while Western and Japanese car manufacturers had already adopted aluminium radiators in the car cooling system for better heat transfer and environmental protection, Chinese cars across the country were still using copper and brass radiators.

The second obstacle was that the policy of the National Economic and Development Committee in 1994 guided the government to promote the automobile industry on the principles of high entry level, mass production and professional management. All these principles would require the accumulation of capital and skilled professionals which unfortunately China lacked. The government could only rely on existing automobile companies like FAW and DMC to carry out this mission by setting up JVs with foreign firms. Another goal was to consolidate the automobile industry in order to prevent the growth of those small modified automobile factories that were scattered throughout China and that had low standards and were producing a product that was not beneficial for consumers. The year 1994 was a turning point for the Chinese automobile industry,

which faced a myriad of government-mandated investment requirements for car factories. The government's Automobile Industry Policy further stressed that it would support those factories and enterprises with a certain level of manufacturing capacity and a market share in developing brand names and technology. The twelfth article of Chapter Three of the Automobile Industry Policy states that there would be tax waivers, financial aid and even government loans made available to JVs such as FAW, SAIC and DMC. All of which was in sharp contrast to the lack of benefits offered to smaller enterprises that intended to engage in the same industry.⁵⁵

3.2.3. Changing policy: 1994 to 2004 and onwards

In 1994 the State Council issued the Automobile Industry Policy (AIP), which stipulated the rules for vehicle product development, trade control, service, catalogue control, nationalisation initiatives and industry organisation, and set general guidelines for foreign JVs. Compared to the general automobile industry guidelines issued in 1986, the AIP regulations were much stricter. First of all, the government decided to bring the automobile industry under closer supervision. Given that the intention of China was to join the WTO, the AIP was meant to protect the automobile industry in the areas of investment, technology, service and trade from the impact of the entry of foreign automakers. The principle of impartiality contained in the charter of the WTO would no doubt create a direct conflict with the protectionism of the Chinese AIP. The aim of the

⁵⁵ Zhuang, Weiming, Zhuang Jide, *Qiche Zhengce Fagui yu Qiche Chanye Fazhan*, 汽车政策法规与汽车工业发展, *Automobile Policy and Regulation and Automobile Industry Development* (Beijing: Beijing Institute of Technology Press, 2006). Page 18.

AIP was in fact complicated because the entry of foreign automakers into China was inevitable, but slowing this entry would not help China meet the increasing need of foreign capital and technology.

Second, the government lacked experience in dealing with the nature of this ever-changing and growing industry. Local and municipal governments, motivated by the potential revenues in the auto industry, rushed to apply for permits to manufacture cars, which in their opinion was the beginning of a major industry within China and would benefit their administrative territories. This happened in every province along the coast. The central government deemed it necessary to focus its support on certain preferred auto factories, in order to reduce unhealthy competition and the waste of state resources. So, the new revised policy created an obstacle by increasing the minimum required capital for any investor from 1.5 to 2 billion RMB.

Third, the minimum 50 percent controlling right of the JVs remained unchanged. The Chinese government had been firm on this issue since its introduction in 1984: Chinese firms must control no less than 50 percent of the capital, even when original shares were sold to foreign companies. This applied to the entire assembly of automobiles, specialist vehicles, farming equipment and motorcycles.

Fourth, the new policy removed the tax advantages enjoyed in the past by importers who imported cars into duty free zones such as Shenzhen and Tianjin. According to the new rules, imported cars no longer attracted duties based on where they arrived in the country. Only four port cities (Dalian, Tianjin, Shanghai and Huangpu), two inland cities (Manzhouli and Shenzhen) and one autonomous region in Guangxi Province, were

officially assigned as the customs entry points for imported cars. No other cities were allowed to import automobiles.

Fifth, the new policy stopped the malpractice of selling the ‘shell’ of a company with its car production permits to others. Any company that did not make a profit would be forced to cease operations. Under the new policy, the re-sale of the company was regulated by the government, which would limit the number of car production companies.

Sixth, the new policy also stipulated the structure of automobile sales, i.e. dealerships, which must be authorised by approved manufacturers in China. The purpose of this was to ensure that cars would be provided with the highest standards of service and spare parts; and indeed after-sale surveys were to be conducted to monitor consumer satisfaction.

By 2005, the number of registered car dealers or re-sellers in China was near 30,000, but the number of authorised manufacturer dealers was only approximately 2,000, or 7 percent of all businesses involved in new car sales.⁵⁶ It had been expected that under the new policy that many of the former would close down or convert themselves to used-car dealers.

Seventh, the new policy encouraged private ownership of automobiles. The tenth State Five-year State Economic Plan (2001-2005) announced in October 2000 first proposed the concept of ‘allowing the car to enter the domain of the people’ as a fundamental part of raising the standard of living, considering it as important as the provision of clothing

⁵⁶ *Ibid.*, Page 21.

and shelter. Under this, policies followed, mandating such provisions as automobile financing and regulating financial management and controls. Policies regulating used car sales were also implemented in 2001 and amended in 2004 AIP policy.⁵⁷

3.3 Global positioning of multinational automakers in China

When China opened its doors to international commerce at the beginning of the 1980s, there were no resources of capital and technology, or a market for passenger vehicle production. As a developing country, the Chinese government could hardly be in a position to catch up with the USA, Japan, Germany or even Korea in this area. The only option to quickly establish an automotive industry was to go into partnership with foreign companies with a limitation that their controlling right should not exceed 50 percent.

Through cooperation with foreign automakers from 1984 until 2001 (the same period in which China campaigned to join the WTO), China experienced its most prodigious growth in automobile production, a situation similar to the Japanese auto industry in the 1970s and 1980s. At double digit rates of growth in vehicle sales and production, the Chinese automobile industry was incorporated as a partner in the multinational auto powers' global strategic plans and marketing strategies. Regarding compliance with the WTO principle of being fair with each trading partner, the 50 percent ownership rule was

⁵⁷ ANON., (2004) 'Qiche Chanye Fazhan Zhengce 2004, 汽车产业发展政策 2004 (Chinese Automobile Industry Policy 2004)' National Reform and Development Commission State Council of China <<http://www.chinalaw.gov.cn/article/fgkd/xfq/gwybmgz/200409/20040900016824.shtml>> 28 May 2009

challenged by the multinational companies and became one of the most controversial issues for Chinese auto policy decision makers. It was equally perceivable that foreign companies would not lose control of operating and managing companies in China by letting Chinese companies own more than 50 percent of the rights.

In 1983 the first Sino-foreign JV for automobile manufacture, Beijing-Jeep, was formed in Beijing and marked the beginning of an era for the introduction of foreign capital and technology. Since 1984 more than 300 foreign-invested enterprises and JVs with automobile and component companies in the truck, bus, and passenger car areas were established. Among these, 49 JVs started to build cars through the CKD approach in order to bypass import restrictions and avoid the high tariffs. Each company first had to obtain a permit to purchase foreign technology for a certain vehicle model, then import several basic modules and components, and finally assemble them, sometimes with locally produced parts.

The Ford Motor Company used this method in the early 1930s to build cars in South America and many countries adopted CKD production to expedite the process of building cars. Naturally, many JVs took advantage of the CKD approach in China too, as the quicker production it allows can better meet high demands. Table 3.2 shows the primary foreign JVs between 1983 and 1991. During this period, most of the foreign companies had only one partnership with the major Chinese automakers in order to test the water in China's recent opening door to trade.

Table 3. 2.Chinese automobile JVs with foreign enterprises, 1983-1991⁵⁸

No.	Automakers	JV partner	Foreign share percent	Date of the protocol
1	FAW-Volkswagen	VW (Germany)	40%	1991
2	DMC-Peugeot Citroen Automobile	Peugeot (France)	30%	1990
3	SAIC-VW	VW (Germany)	50%	1985
4	Beijing- Jeep	Chrysler AMC (the USA)	31.6%	1983
5	GAIG-Peugeot	Peugeot (France)	40%	1985

In the early 1980s, Chinese government policy makers realised that without sources of financial capital, technology or market demand, it was unwise to build an auto industry entirely on its own. Although China had opened its doors to international trade and commerce, the automobile industry still required the accrual of technological expertise and experimental data, which could not be obtained by trade alone. In the meantime, some global automakers, such as General Motors and Ford Motors, had suffered stagnant growth in their domestic market and began to look for new and alternative markets. Due to a lack of confidence in China's primitive automobile markets, only a few of the foreign multinational corporations were willing to test the water.

⁵⁸ The author of this thesis has made this table based the following data: For FAW-VW, DMC-Peugeot/Citroen, SAIC-VW: Gongzai Yan, 2009, 'Diedang Liushi Nian, 跌宕六十年 (60 Years of Chronological Events of the Chinese Automobile Industry)', <http://blog.sina.com.cn/s/blog_5cf507670100dp5p.html>, accessed 5 June 2009. For Beijing-Jeep, GAIG-Peugeot, Tianjin Xiali: Feiyu, 2006, 'Qiche Gongye Wushi Nian Fazhan yu Huigu, 汽车工业五十年发展与回顾 (Recollections and Development of Automobile Industry in 50 Years)', <<http://old.blog.edu.cn/user1/20658/archives/2006/1277432.shtml>>, accessed 5 June 2009.

The American Motor Corporation (AMC, late merged with Chrysler) was the first to sign an agreement to form a JV with the Beijing Automobile Company in May 1983. Manufacturing operations began in January 1984. Shortly after, in March 1985, VW and Audi Group formed a JV with Shanghai Automobile Industrial Company (SAIC) to produce small engine models ‘Santana’ and ‘Audi 200’, which had already been retired from other markets. France’s Peugeot followed suit and entered into a cooperative enterprise with Guangzhou Automobile and Industrial Company in September 1986. These early entrants into the Chinese market were joined by America’s GM and major Japanese and Korean automobile producers in the late 1980s and early 1990s as China adopted a more open economic policy and encouraged foreign investment in the automotive sector. Whether a foreign company decided to engage promptly with China’s market in the 1980s is not a determining factor in its market share in later periods. For instance, both AMC and Peugeot’s expansion plan failed in China and they lost their markets to other foreign companies who entered the Chinese market later, such as General Motor, Toyota, Honda, and Hyundai in the 1990s and 2000s.

The 50 percent ownership formula over the JVs has been perceived by Chinese policy makers as a measure to allow the Chinese partners to learn the necessary technology and skills from the foreign partners they cooperate with. By 2005, almost every major auto maker in the world had established a JV with Chinese firms. The world’s eleven largest car manufacturing companies GM, Toyota, Ford, VW, Chrysler Motors, Nissan/Renault, PSA Peugeot Citroen S. A., Bayerische Motoren Werke AG (BMW), Mercedes-Benz, Honda, and Hyundai-Kia Group, had all established their presence in China, bringing in not only their capital and technology but also their associated component suppliers.

Since the component factories were not subject to the 50 percent ownership rule, they were brought into China for the requirements of the JVs they supplied, and for the sake of saving costs instead of paying high rate tariffs on imported parts.

3.3.1 Multiple partnerships

The revised Chinese AIP of 1994 continued to stipulate that foreign investors' rights of ownership could not exceed 50 percent of the JV and they were not allowed to produce the same product.⁵⁹ It was possible for foreign automakers to have two automobile JVs in China on the condition that these two JVs must produce two different models. The rule was considered controversial and contradictory because first, it created direct competition between Chinese companies, and second it duplicates the foreign companies' efforts to invest in China. But it gave some leeway to foreign auto producers to partner with more than one Chinese company in different territories in China and indeed foreign auto producers such as VW, Toyota, Nissan and Honda have all chosen to form two JVs with different Chinese partners in various regions to gain more market exposure. These ventures are spread amongst the coastal or near-coastal provinces and are mostly concentrated in Jiangsu and Guangdong, where eight JV factories have been built. The 1994 AIP policy was revised by the 2004 AIP policy with a focus on raising the minimum investment and production requirement for the entry of new car manufacturers, but the minimum 50 percent ownership formula remained unchanged.

3.3.2 Cornering the backyard market

⁵⁹ Clause 32, ANON., (2004) '1994 Nian Banbu Shishi de Qiche Gongye Chanye Zhence, 1994 年颁布实施的汽车工业产业政策 (1994 Chinese Automobile Industry Policy)' <<http://www.people.com.cn/GB/qiche/25959/34162/34165/2540192.html>> 28 May 2009

The complexity of this rule emerged when individual Chinese auto manufacturers began to form different JVs with multiple foreign auto companies. Each foreign auto manufacturer's strategy was different. Because the major Chinese automakers were mostly state, local, or municipal government-owned, there was fierce competition in their respective regions. They sought out foreign auto makers according to the companies' strengths and product reputations and sought maximum market distribution within their own locality. For instance, FAW, set up a JV with Germany's VW and Audi in northern China in the late 1980s to cater for demand in the more industrial provinces in the north, and later established a company with Toyota in Tianjin to focus on markets for small-engine vehicles. DMC, a Hubei based state-owned enterprise (SOE) and the second oldest Chinese automaker, entered a JV relationship with Japan's Honda in Wuhan, Hubei, and with the French Peugeot Citroën in the same province. In the same market region, the additional product line did provide benefits in the local market, and created competition among JVs with different foreign companies.

3.3.3 Intertwined rivals in the same or different regions

Since both foreign and Chinese automakers struggled within limited options to find the best partners, competition amongst the JVs was widespread in various provinces. For example, FAW had a JV with Toyota in Sichuan Province to produce various models to compete with DMC's JV with Honda in Hubei Province, just a couple of hundred miles away. DMC's JV with Nissan in Guangzhou, Guangdong Province made smaller models to compete in southern China with the Guangzhou Automobile Industry Group (GAIG). It had another JV with Honda to manufacture cars in Hubei and Sichuan provinces.

As well as foreign multinational corporations (MNC) maximum ownership in a vehicle manufacturing business in China not exceeding 50 percent, another unwavering rule was that they could not form ventures with more than two Chinese partners. The restriction to two partnerships, however, did not apply to Chinese companies, who could partner with as many companies as they choose. The choices for major foreign automakers thus became limited: they were prohibited from forming partnerships with companies outside the Chinese six (FAW, DMC and SAIC as the Big Three and BAIC, Tianjin-Xiali and GAIC as the Small Three). As shown in Table 3.3, within the period between 1983 and 2005, 19 major JVs were formed between the Chinese six and eleven global MNCs. The MNCs aggressively sought the maximum 50 percent ownership stakes, and whilst this was usually achieved there were a few exceptions. Volkswagen, for instance, had 50 percent ownership in their venture with SAIC in southern China, but took only 40 percent ownership in their venture with FAW in the north. AMC held 42.5 percent in their venture with Beijing Jeep in 1983 before their merger with Chrysler and then with Mercedes.

On the surface, the fifty-fifty percent ownership structure stipulated that each partner had equal rights and obligations. The Chinese government had no intention of making any exceptions to the 50 percent ownership rule, so in the growing Chinese automobile industry the JV became a continually debated issue. From the MNCs' point of view, they owned the global brand name, components suppliers, technology, management, after-sales services, and capital. In theory they needed no partners to set up new business operations, but in order to comply with the Chinese policy of partnership with a government enterprise they had to re-evaluate their global strategy. However, the JV

structure did offer certain advantages, including support from the Chinese government such as a preferential business policy and a shortcut in bureaucratic practices with the government networking and connections. As a result, for MNCs in the semi-open political economy in China, partnering with government automotive enterprises was as beneficial as it was restricting.

Table 3. 3. Contract terms and ownership structure of the JVs in China, 1983-2007⁶⁰

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- ⁶⁰ The author of this thesis has compiled and edited the data from Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2007*, *中国汽车工业年鉴2007* (China Automotive Industry Yearbook 2007). Pages 485-490;
- ANON., 2007, 'Yu Lang Gong Wu de Rizhi, 与狼共舞的日子 (Dancing with the Wolves)', <<http://www.wangjing.cn/items9488.html>>, accessed 3 June 2007.
- Wang, Yi, 2007, 'Zhongguo Bainian Qiche Tuwen Jilu, 中国百年汽车图文纪录 (Chronicle Records of China Automobile Industry)', <<http://126chenliang.blog.163.com/blog/static/31382691200751522212237/>>, accessed 3 June, 2009
- SAIC, 2007, 'Shanghai Qiche Niandu Baogao 2007, 上海汽车年度报告 2007 (SAIC Annual Report 2007)', <http://www.sse.com.cn/cs/zhs/scfw/gg/ssgs/2008-03-27/600104_2007_n.pdf>, accessed 3 June 2009.
- Da Zhonghua Qiche, 2004, 'Beijing Jipu Jiang Yiming Beijing Benchi 北京吉普将易名北京奔驰 (Beijing Jeep Renamed Beijing-Benz)', <<http://motor.icxo.com/htmlnews/2004/12/06/494759.htm>>, accessed 3 June 2009.
- Ran, Zexun, 2002, 'Zhongguo Qiche Hangye Chongzu: Cong 'Sanda Zhanyi' dao Simian Kaihua, 中国汽车行业重组: 从"三大战役" 到 四面开花 (Reorganisation of China's Automobile Industry: From Big Three to Multiple Groups)', <<http://auto.sina.com.cn/news/2002-10-21/29653.shtml>>, accessed 3 June 2009.
- Nanfang Dushi Bao, ANON., 2002, 'Sanda Jituan yu Kuaguo Jutou Qiangqiang Lianhe Fenli Jiaozhu Zhongguo Shichang, 三大集团与跨国巨头强强联合分立角逐中国市场 (Big Three and MNCs Reinforcing in Chinese Market)', <<http://auto.sina.com/news/2002-11-11/30484.shtml>>, accessed 3 June 2009.
- Huaxun Caijing, Nanfang Ribao, (Nanfang Daily), 3 August 2007, ANON., 2007, 'Feiyate Nengfou Pojie Zhongguo Kuiju, 菲亚特能否破解中国困局 (Can Fiat Save Itself from Being Trapped in China?)', <<http://www.591hx.com/news/20070803/16483128640.html>>, accessed 3 June 2009.
- ANON., 2002, 'Daike yu Beijing Jipu Yanchang Sanshinian de Hezi Hetong Huo Zhengfu Pizhun, 戴-克与北京吉普延长三十年的合资合同获政府批准 (The JV Contract between Diaz-Benz-Chrysler and Beijing Automobile Industrial Company Extended and Approved by the Chinese Government)', <<http://auto.sina.com.cn/news/2002-06-30/25933.shtml>>, accessed 3 June 2009.
- ANON., 2008, 'Difang he Guangda Shichang, 地方和广大市场 (Local and General Automobile Markets)', <<http://www.qichequan.com/?uid-1-action-viewspace-itemid-667>>, accessed 15 August 2008.

Joint ventures	Ownership Shares	Contract timeline			Production in 2006/unit
		Beginning	Ending	Contract term	
European and American					
BAW	57.60%	1983	2033	50	9,650
Daimler-Chrysler (Jeep)	42.40%				
SAIC	50%	1985	2030	45	350,630
VW	50%				
FAW	60%	1991	2015	25	346,787
VW	40%				
DMC	50%	1992	2042	50	201,858
PSA	50%				
SAIC	50%	1997	2027	30	414,723
GM	50%				
Nanjing Auto	50%	1999	2007	9	32,066
Fiat	50%				
Changan	50%	2001	2050	50	130,572
Ford	50%				
BCA	50%	2003	2017	15	25,808
BMW	50%				
BAW	50%	2005	2035	30	18,726
Benz-DaimlerChrysler	50%				
Japanese and Korean					
Changan	50%	1993	2023	30	112,565
SUZUKI	50%				
Guangzhou Auto	50%	1998	2027	30	262,019
Honda	50%				
Tianjin FAW	50%	2000	2030	30	36,871

Zhang Boshun Yangjie, Yan Guangming, 2007, '2007 Zhongguo Zuiju Yingxiangli Chepingpang Hongpi Shu, 2007 中国最具影响力车评榜红皮书 (The Red Book: the Most Influential Cars In China, 2007)', <http://www.news365.com.cn/qc/200712/t20071218_1690797_9.htm>, accessed 3 June 2009.

Huaerji dianxun, 13 October 2004, ANON., 2004, 'Baoma: Kuaisu dan Xiaobu de Zhongguo Zhanlue, 宝马: 快速但小步的中国战略 (BMW: Fast and Careful Strategy in China), 2004', <<http://motor.wsfire.com/htmlnews/2004/10/13/402113.htm>>, accessed 29 May 2009.

TOYOTA	50%				
BAW	50%	2002	2032	30	290,080
Hyundai	50%				
DMC	25%	2002	2032	30	114,523
Jiangsu Ruida	25%				
KIA	50%				
DMC	50%	2003	2053	50	201,251

As can be seen in Table 3.3 above, during the 1990s and 2000s, the MNCs entered partnerships with the Chinese six and two more provincial companies, Nanjing Automobile Corporation (NAC) and Changan Automobile, with most contracts lasting between 25 and 30 years with the option to renew.⁶¹ Most of the MNCs teamed up with two Chinese partners even though the partner had another JV with its competitor. For instance, Volkswagen had a JV with SAIC, which also had a JV with GM in Shanghai; in both Tianjin and Changchun in Jilin Province, Toyota setup a venture with FAW, which also formed a partnership with Mazda in the same cities; in Wuhan of Hubei Province, Nissan Motors formed a JV with DMC, which similarly established a venture with Honda in the same district; and Honda in Guangzhou set up a JV with GAIC, which also partnered with Toyota in the same province. The global MNCs have found that they were not only cooperating with various Chinese state enterprises as partners, but were also competing with the same partners in their ventures with other global competitors. Figure 3.6 shows the distribution and the relationship among the 12 global MNCs and the nine Chinese companies. It is highly complex due to the JV's interwoven ownership and the intermingled competition for those JVs in the Chinese domestic market.

⁶¹ *Ibid.* As at the time of writing, both Chinese and foreign companies have optioned to renew their contracts.

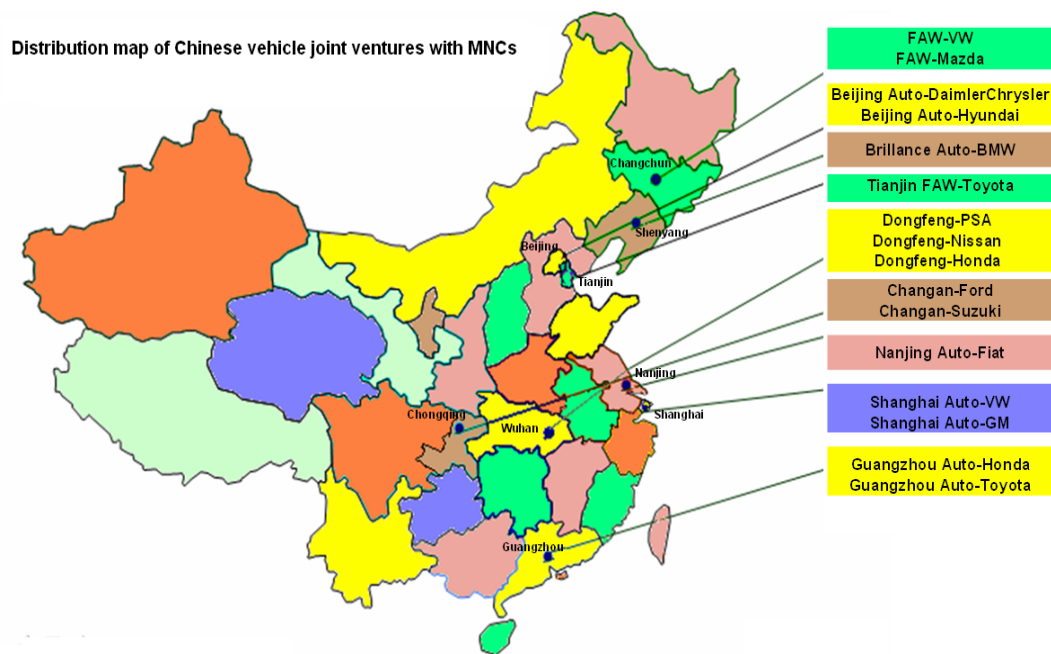


Figure 3. 6. Distribution map of Chinese vehicle JVs, 1983-2007⁶²

Naturally, given the ownership structure, many MNCs were concerned with losing control in management, technology transfer and components sourcing, so they tried to break through the barriers. For instance, in May 2003, Mercedes intended to increase their ownership shares when setting up their JV with Beijing Automobile Works (BAW),

⁶² The author of this thesis has made this map based on the locations of the Chinese automobile JVs

one of the Small Three. The Chinese government rejected the proposal and did not issue the manufacturing permit, which forced Mercedes to adhere to the 50 percent ownership rule.⁶³ Similarly, in June 2006 Korea's Kia, in their cooperation with DMC made an unsuccessful attempt to take more than 50 percent of the ownership.⁶⁴ The only exception is Honda which owns 65 percent one of its JV with the provincial and the state enterprises, GAIC and DMC, which own 25 percent and 10 percent respectively. The 1994 government guideline stipulated that Chinese shares in JVs should be no lower than 50 percent, and the 2004 policy reinforced the 50/50 ownership rule between MNCs and Chinese companies. However, the 49th addendum to the same policy exempted foreign companies that manufacture vehicles for export only from the 50 percent ownership restrictions.⁶⁵ The exemption was seen as a move by the government to gain hard foreign currency that does not conflict with the domestic JV setup.⁶⁶ Using this opportunity, in November 2002 Honda established the China Honda Automobile Company (CHAC) to manufacture and export its model 'Jazz', sharing the same engine and chassis platform as the model 'Fit' and made by its venture with Guangzhou Automobile Company. Honda hence avoided the direct violation of the 'maximum two Chinese partners' rule since it had formed JVs with Guangzhou and DMC before 2002. Using in-house components

⁶³ Xiang, Hansong, *Zhongguo Qiche Yingxiao Fengyun Lu, 中国汽车营销风云录 (Chinese Automobile Management and Marketing)* (Beijing: China Machine Press, 2007). Page 20.

⁶⁴ *Ibid.*

⁶⁵ The Chinese government AIP, Addendum 49 ANON., (1994) '1994 Qiche Gongye Chanye Zhengce, 1994 中国汽车产业政策 (1994 Automobile Industry Policy)' State Council of China <<http://www.people.com.cn/GB/qiche/25959/34162/34165/2540192.html>> 8 May 2008

⁶⁶ Qiche Chanye Fazhan Zhengce (Automobile Industry Development Policy) was issued on 1 June 2004 by the Chinese State Department National Development and Reform Committee.

suppliers like the Guangzhou/Honda JV, CHAC could also meet the requirement that a minimum 40 percent of parts had to be domestically produced in China.

The Guangzhou/Honda JV represents just one of the challenges to the 50/50 ownership rule. When many Chinese companies went public and began trading on the international stock markets, they could no longer be considered truly domestic or state assets. The AIP of 2004 will expire in 2010 and the MNCs are positioned to fight for greater or complete control of the current JVs, based on an evaluation of their Chinese partners' contributions to their JVs. In October 2003, at the Tokyo International Automobile Show, Carlos Ghosn, the CEO of the French PSA and Nissan/Peugeot bluntly commented on Nissan's Chinese partners, saying that apart from the lower labour cost and sales networking, their contribution to management and operations has been almost 'nothing'.⁶⁷

Whether they liked the Chinese policies or not, the MNCs wasted no time in building bases in China, fearing that market positions would be taken by others. Though the MNCs could only select from the Big Three and the Small Three to form partnerships, time was a factor, and the MNCs could choose for themselves who they wanted to partner with. VW, GM, and the French PSA were the first few MNCs to go to China for market positioning in the 1980s and 1990s. However, the first partnerships ended with different results. VW and GM took the lead in building factories and sales networks in Shanghai, while the French PSA failed with their partner in Guangzhou. PSA established their venture with GAIC in 1985 to produce the model 'Peugeot 505', just after southern China opened its doors to foreign companies. At the time there were no qualified component

⁶⁷ Xiang, *Zhongguo Qiche Yingxiao Fengyun Lu*, 中国汽车营销风云录 (*Chinese Automobile Management and Marketing*). Page 2.

suppliers in Guangzhou or nearby areas, so Guangzhou-Peugeot relied entirely on parts imported from France for vehicle production. These parts, unfortunately, were subject to high import duties. The unprofitable economy of scale of manufacturing by the Chinese-French partnership forced the JV to dissolve in 1997. However, having found a new collaborator DMC, the French PSA returned to China in 2001.⁶⁸

Not every foreign MNC used their maximum rights to form JVs under the guidelines set by the Chinese government. For instance, GM, Ford and Mercedes only chose one working partner in China while their Chinese counterparts could still establish separate ventures with other MNCs, a situation seldom witnessed in other countries. Unable to break the 50 percent ownership rule, the MNCs could only exert influence in their Chinese JVs using other approaches. First, because the MNCs controlled the engine technology and intellectual properties, they could specify which components to use around the engine, including body parts. To acquire the core parts that the Chinese factories were unable to make or did not make, the JVs had to import them from designated suppliers. When the MNCs brought their affiliated parts suppliers to China from overseas, the Chinese partners could not contest the supply chain. For instance, GM brought in Delphi, their largest parts supplier, and Toyota brought in Nippon Denso, their core electronic parts supplier. Even when there were no financial ties between the components suppliers and the MNCs, Chinese components suppliers still could not obtain the business due to their lack of international industrial standards certifications such as ISO 9001 and QS 9000, which were required by the MNCs. Second, the MNCs could

⁶⁸ Jia, Ke, *Zhongguo Qiche Diaocha, 中国汽车调查, Investigation of Chinese Automobiles* (Shanghai: Shanghai Jiaotong University Press, 2007). Pages 30-31.

protect their own interests, not the JVs, by supplying the JV with components that had a fixed or higher profit. This was common in the early 1990s when the MNCs brought in the CKD system to assemble vehicles. The Chinese government opposed this practice and effectively banned it by imposing higher import duties on overseas component suppliers.⁶⁹ It is understandable that the Chinese government wished to increase the market share for domestic component suppliers. So as China began manufacturing cars and components for export, trade conflicts between the MNCs and Chinese partners became more frequent and more challenging.

Since the establishment of the JV in the 1980s, there have been struggles for power in the boardroom, even though the two partners own equal shares of their enterprise. For the Chinese, since they do not control the technology, they wish to control the sales and marketing networks. The MNCs, on the other hand, believe that because they own the technology they should be allowed to design the production model, configure the specification of components, and set the pricing. When the market was promising and sales were good, there was little disagreement between the partners. When sales dropped or when new products did not sell well, the Chinese partners would often blame the MNC for the failings of a certain model, while the MNC would accuse the Chinese partner of poor marketing and pricing. For instance, in January 2006, the Executive Vice President

⁶⁹ *Ibid.*, Page 21. In April 2005, the Chinese government started to levy the same import tariff as the complete imported vehicle when 60% of the components for a vehicle are imported from overseas for manufacturing purposes. EU members and American car makers protested against this practice.

of VW in China, Sou Weiming, arrived in FAW-VW's office as the newly- appointed director to take control of sales for fear of losing market share to GM-SAIC.⁷⁰

3.4 The establishment of Chinese government-protected companies and their JVs

Chinese automobile policy was not clear about where the foreign companies could find their business partners in China until August 1987, when the Chinese State Department held meetings in Beidai He (Beidai River) and resolved to build the 'San Da' (Big Three) industrial and automobile manufacturing zones, i.e. FAW in Changchun, DMC in Hubei Province, and SAIC in Shanghai. This served as a guideline, as well as a 'policy' that required higher entry requirements for capital to ensure maximum production for economies of scale. In October 1987, the State Department issued a memorandum to add BAW, Tianjin Automobile Industry Company and GAIC as the 'San Xiao' (Small Three) automotive bases and set a guideline to stipulate that the automobile components industry must be localised to 50 percent.⁷¹ The government, as stated in the memorandum, would no longer support other provincial or regional automotive companies, with the exception of the factories that produced cars for military use. The guideline to focus on manufacturing passenger vehicles by the Big Three and Small Three was re-mandated in February 1993 by the National Development and Reform Commission to ensure there

⁷⁰ Ren, Xuan, 2005, FAW-VW official website 'Personal Change at FAW-Volkswagen', <http://www.faw.com/news/dzjy_jybj/jyzb/20051212214200013.htm>, accessed 6 August 2009.

⁷¹ State Department Memorandum 'Guanyu yange konzhi jiaoche shengchan dian de tongzhi' 31 October 1987 (Memorandum regarding strict control of the factories in manufacturing passenger vehicle) available at ><http://www.wjszxx.com/lib/teacher/book08/8014218.PDF>, accessed 23 May 2009.

was no abuse in issuing permits for automobile manufacturing at the local and provincial level.⁷² Figure 3.7 shows the distribution of the Big Three and the Small Three before the Tianjin Xiali was merged into FAW in 2002, details of which will be explained in the later part of this chapter.

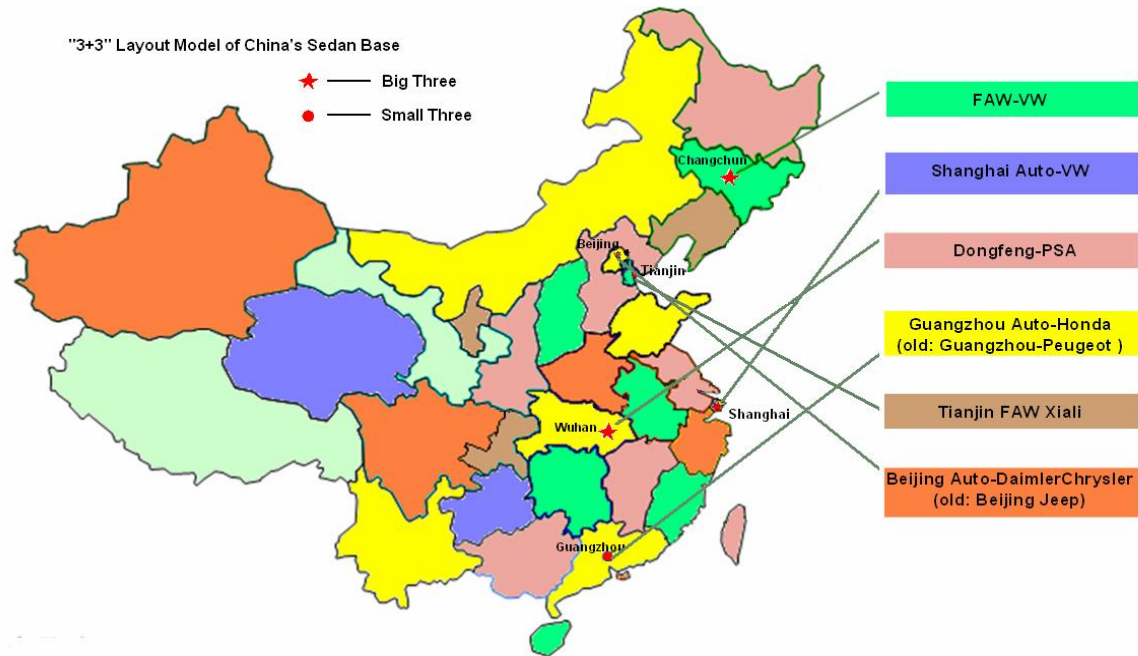


Figure 3. 7. The distribution of the Big Three and the Small Three⁷³

Between 1994 and 2004, JV auto production and sales grew impressively, which further reinforced the government's desire to support the Chinese Big Three and Small Three. The government's modified automotive industry policy, issued in April 2004, stated

⁷² ANON., (1993) 'Guowuyuan Guanyu Yangge Kongzhi Shenpi Jiaocheng Qingxingche Xiangmu de Tongzhi, 国务院关于严格控制审批轿车、轻型车项目的通知 (State Council Memorandum Regarding Strict Control in Issuing Manufacturing of Passenger Cars and Microcars)' National Development and Reform Commission <http://www.100test.com/html/328/s_328986_32.pdf> 29 April 2009

⁷³ The author of this thesis has made this map based on the locations of the Big Three and Small Three Chinese automobile companies.

clearly that the government would continue to back the Big Three and the Small Three.⁷⁴ Further, it restricted the smaller vehicle modification factories from buying and reselling government-issued manufacturing permits, which until then had been a common practice for automakers facing financial difficulties. For instance, Geely, a privately-owned automobile company, had bought a permit from a provincial state prison. Chery Automobile, another provincially-owned company, had traded its company shares for a manufacturing permit that separated it from SAIC. Such moves will be discussed further in Chapter 4.

3.4.1. The Big Three

FAW started building trucks and military vehicles in 1953 and its truck operation has been in existence for the last five decades. Its passenger car production was limited only to its model 'Hongqi', with handcrafted body panels and borrowed engines from the USA or Germany. Considered as the 'eldest son of the Republic' in the Chinese automobile industry, its sales and networking had always been protected by the government.

In 1991, FAW capitalised on its opportunity to start a JV with VW and began to produce passenger cars for government use and taxis for public use in various cities. Subsequently it entered into two other JVs with Toyota (in 2004) and Mazda (in 2005). Benefiting from this cooperation with foreign companies, FAW had the opportunity to

⁷⁴ National Development and Reform Commission, (2004) 'Qiche Chanye Fazhan Zhengce, 汽车产业发展政策 (Policy of Automobile Industry Development)' National Development and Reform Commission <http://www.china.com.cn/policy/txt/2004-06/01/content_5576936.htm> 15 July 2008. In Clause 16 it states that the government encourages the automobile and motorcycle industries, develops international cooperation, and participates in division of labour. The government supports large-scale state automotive enterprises in their JV so as to expand to maximum market and become accustomed to globalisation and its concomitant trends.

learn advanced car building technology. In 2004, FAW's one millionth car came off the production line, but this figure combined trucks, commercial buses, military vehicles and passenger cars from the JV. In the 1990s, taking advantage of capital from the financial market and the existing government sales network for trucks, FAW contracted with the Austrian Anstalt fur Verbrennungs Kraft Maschinen (AVL) to upgrade its truck with a series of new diesel engines to overhaul the aged model 'Jie Fang', which had not been changed for three decades.

To the country's disappointment, FAW never truly manufactured its own passenger car in any great quantity. As discussed in Chapter 2, the 'Hongqi' model was a handcrafted product, often mistaken as the original symbol of indigenous Chinese automobile production, but never mass produced. Though FAW maintained a substantial number of staff and employees, they could not be disposed of as freely as those of a privately owned business. Zhu Yanfeng, the CEO of FAW, once commissioned a feasibility study for the development of FAW's own brand, which concluded that whether it outsourced or designed its own engines, it would require minimum capital of 110 million RMB (approximately US\$76 million) without guaranteed success. He claimed that he could not afford to make a decision that might risk financial disaster for a company with more than 130,000 employees.⁷⁵ However, Zhu's remarks were regarded by Beijing University Professor Lu Feng as an excuse for Zhu's passiveness and indecisiveness in building a national automobile industry. Lu stressed that the state enterprises under the government protection policy had enjoyed the benefits of being a partner of the MNCs for two

⁷⁵ Jia, Ke, *Zhongguo Qiche Diaocha*, 中国汽车调查, (*Investigation of Chinese Automobiles*) (Shanghai: Shanghai Jiaotong University Press, 2005). Pages 152-3.

decades, and FAW simply did not take the initiative in accumulating core technology for forging China's own brand. Lu further alleged that the government's policy of trading market for technology was a failure and that Zhu's claim that FAW's development of its own brand could not achieve an economy of scale was a myth used to relieve state enterprise leaders' responsibility to build China's indigenous automobile industry.⁷⁶ Whether either Zhu or Lu could satisfactorily justify his argument remains debatable, but it is true that FAW did not develop and produce its own engine. As seen in Table 3.4, with the exception of its commercial vehicle and trucks, all of FAW's passenger vehicles up to 2007 have been products of the JVs with VW and Toyota.

⁷⁶ Feng, Kaidong, Lu Feng, *Fazhan Woguo Zizhu Zhishi Chanquan Qiche Gongye de Zhengce Xuanze*, 发展我国自主知识产权汽车工业的政策选择, (Policy Implications of the Self-development of Intellectual Property Rights in the Automobile Industry) (Beijing: Beijing University Press, 2005). Page 133.

Table 3. 4. Production and sales of FAW, 1992-2007⁷⁷

Year	Production			Sales
	Passenger vehicle	Commercial vehicle	Total	
1992	23,191	114,006	137,197	—
1993	29,924	133,697	163,621	163,478
1994	28,522	149,777	178,299	—
1995	39,718	142,540	182,258	—
1996	44,776	159,967	204,743	199,969
1997	71,353	102,944	174,297	—
1998	81,051	87,300	168,351	171,734
1999	59,508	132,108	191,616	188,417
2000	110,005	210,179	320,184	331,181
2001	150,987	239,863	390,850	256,125
2002	226,439	335,348	561,787	565,493
2003	519,865	338,872	858,737	854,358
2004	613,672	379,882	993,554	1,007,471
2005	761,599	222,063	983,662	982,777
2006	959,910	216,904	1,176,814	1,165,702
2007	1,234,780	225,220	1,460,000	1,436,000

Similar to FAW, the second state automobile company, known as DMC, started in the late 1960s. Located in Shiyan, Hubei province, and used as an interior weapons base during World War II, DMC began military vehicle production to provide backup to FAW as needed. During the period 1984 to 1994, DMC was selected as another state enterprise that the Chinese government wished to associate with foreign auto powers. Japan's Isuzu first entered Hubei province and sub-contracted to DMC to make engines and chassis

⁷⁷ Data is individually derived and edited from Zhongguo Qiche Gongye Nianjian 1993-2007: 1993 Page 110; 1994 Page 241; 1995 Page 90; 1996 Page 84; 1997 Page 76; 1998 Page 271; 1999 Page 325; 2000 Page 364; 2001 Page 381; 2002 Page 65; 2003 Page 35; 2004 Page 52; 2005 Page 114; 2006 Page 82; 2007 Page 291. Macro China database, Pages 2453-4.

components, and not long after, in 1992 it was replaced by the French PSA Group which re-entered the Chinese market after its failure in Guangzhou. In 2003 and 2004, Japan's Nissan, an affiliate of the PSA Group, and Honda formed JVs with DMC. Since its commencement, and under the supervision and management of the State Assets Board, DMC has adopted a conservative approach and has not taken any initiative to forge its own brand. As shown in Figure 3.8, the sales and production of DMC and its JVs has increased since 1998 and total production of passenger car and truck surpassed one million units in 2007. However, all of DMC's passenger vehicle business had been through the structure of a JV and it never built its own brand with its own developed engine, as illustrated in Table 3.5.

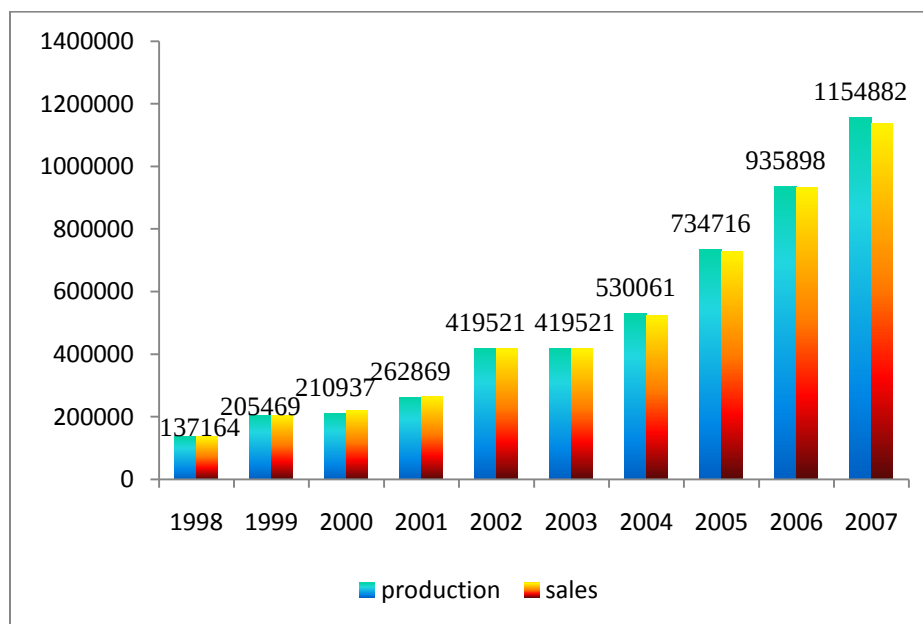


Figure 3. 8. Sales and production of DMC Corporation, 1998-2007⁷⁸

⁷⁸ The author of this thesis has made this figure based on the data of *Zhongguo Qiche Gongye Nianjian, 1999-2008*, (Chinese Automotive Industry Yearbook, 1999-2008), For 1998 figure, 1999, Page ,271; For 1999 figure, 2000, Page 325; For 2000 figure, 2001, Page 364; For 2001 figure, 2002, Page 381;

Table 3. 5. DMC's JVs and share distribution⁷⁹

JV	Share distribution	Product models
DMC	DMC 50% Nissan 50%	Heavy Trucks Medium Trucks Light Trucks Bus Fengxing MPV Fengxing 2.0/2.4
DMC-Honda	DMC 50%	CR-V CIVIC
	Honda 50%	
DMC Shenlong Automobile ⁸⁰	DMC 31%	DMC Peugeot Series DMC Citroen Series
	CDOB 19.5%	
	COAMC 19.5%	
	PSA Peugeot 26.875%	
	Societe Generale 2.5%	
	BNP Paribas 0.625%	
DMC Nissan	DMC 50%	Qashqai Tianlai Series Tiida Series Xuanyi Series
	Nissan 50%	
DMC YuedaQiya	DMC 25%	Rio Cerato Series
	Yueda Investment 25%	
	KIA 50%	
DMC Yuan	DMC 50%	DMC Xiaokang Series
	Chongqing Yuan 50%	

The third of the Big Three, SAIC, started its business in 1955, during a time when China suffered domestic political unrest and its economy was in a poor state. During the 1950s, SAIC's manufacturing was limited to producing modified trucks and hand-crafted passenger cars equipped with agricultural engines. Its production of the model 'Feng Huang' (Phoenix) reached its maximum in 1975 with 5,000 units, which could hardly meet the aggregate demand in the country. Thus, when in the 1980s and 1990s China

For 2002 figure, 2003 Page 415; For 2003 figure, 2004 Page 407; For 2004 figure, 2005 Page 480; For 2005 figure, 2006, Page 506; For 2006 figure, 2007, 450; For 2007 figure, 2008, Page 467.

⁷⁹ ANON., 2008, 'Dongfeng Qiche Gongsi, 东风汽车公司 (Dongfeng Motor Corporation)', <<http://www.dfmc.com.cn/info/organization.aspx>>, accessed 12 May 2009.

⁸⁰ Dongfeng Shenlong Automobile is a JV between China and France. Dongfeng owns 31%, in addition to the 19.5% owned respectively by CDOB (China Development Bank) and COAMC (China Orient Asset Management Corporation), two Chinese government financial institutes. The Chinese shares in this JV are 70%.

anxiously sought foreign partnerships in the automotive industry, SAIC formed its JV with Germany's VW, which was also searching for a partner to reinforce its exposure in south China.

Preferring cautious investment, VW did not introduce its latest technology and products in the 1980s. Instead, it brought its basic but dated model 'Santana' to Shanghai, to be used as taxis and government vehicles. Shanghai is one of the four largest populated municipalities (the others being Beijing, Tianjin, and Chongqing) that are directly governed financially and administratively by the central government. In 1988 the Shanghai Municipal government established a protective policy within the Shanghai metropolitan region and stipulated that the model 'Santana' must be used for all government vehicles and taxis. This mandate allowed the SAIC-VW venture to absorb its initial manufacturing capacity and therefore gave it a head start, safeguarding the relationship between its production and sales for more than fifteen years from the late 1980s through the 1990s.

In 1997 SAIC went public in Shanghai, combining the assets of SAIC Motors and other state and local components suppliers. It became a conglomerate enterprise of manufacturing vehicles and components, and of sales and services. In June 1997, SAIC formed a further partnership with GM to produce passenger cars, based on the chassis platform of Buick, one of GM's divisions. Sales took off between 2001 and 2004 and SAIC overtook FAW's production and sales in the passenger car category, becoming the largest passenger automobile manufacturer in China. Under the pressures of growing demand from the Chinese public, SAIC often asked why, whilst enjoying the benefits of

partnering GM and VW for years, it could not forge its own brand. A comparison with Korea's Hyundai, which started its automobile manufacturing business in the 1980s, the same time as China's FAW and SAIC, is not favourable, as the Korean company had already produced its own product line of vehicles.⁸¹ In contrast to FAW and DMC's bureaucratic and conventional approach, SAIC (as the leader of the Big Three), decided to deal with the domestic criticism with a new approach: to acquire an existing automobile company and its technology.

When the British MG Rover ran into financial problems and could not bail itself out by selling to the German BMW group in the early 2000s, it started to look for a new buyer. Through a series of negotiations with various Chinese companies, including NAC, Geely, and Brilliance Auto, MG Rover, it favoured SAIC as the final buyer for its engine technology and platform design blueprints. SAIC successfully made the acquisition in June 2004, seeing it as an opportunity as well as a shortcut to producing its own brand by using MG Rover's existing engine data for certain models. However, this transaction did not solve MG Rover's crisis, which needed to find another buyer for its equipment and assets. Competing with SAIC in the bidding for MG Rover, NAC, another Chinese regional company that produced trucks and had a JV with Italy's Fiat, bought the primary assets of MG Rover in 2006. It appeared that two Chinese companies, SAIC and NAC, had paid MG Rover for the same thing, but SAIC could not manufacture MG Rover's model without physical moulds and tooling. Since both Chinese companies

⁸¹ Lu, Feng, *Fazhan Woguo Zizhu Zhishi Chanquan Qiche Gongye de Zhengce Xuanze*, 发展我国自主知识产权汽车工业的政策选择, (Policy Implications of the Self-development of Intellectual Property Rights in the Automobile Industry). Page 138.

were under the supervision and administration of the Chinese State Asset Board, the internal settlement and merger was easy.

Throughout the 1990s and 2000s the capital in NAC had been restructured several times, and returns had been poor. Its fixed assets were high but the debt ratio amounted to 74.2 percent, forcing it to find a financial solution. In 2007, under the government's consolidation plan NAC merged with SAIC, which utilised the newly acquired MG Rover's technology and facilities, producing its Chinese 'indigenous' 2.6 L engine model 'Rongwei 750'(Roewe 750). In October 2004, the same year that SAIC bought MG Rover, it also invested in Korea's financially troubled SsangYong Motors, and took 48.92 percent of ownership, buying into SsangYong Motors' existing sport utility vehicle SUV technology. In 2007, SAIC's JV passenger vehicle production reached record sales of 1.69 million units, but of these only 17,346 units were their own model Roewe, which amounted to a feeble 1 percent of its entire passenger production.⁸²

3.4.2. The Small Three

The term 'Small Three' refers to the three major populated cities of Beijing, Tianjin and Guangzhou, with the first two located in the north and the third one in the south, which were mandated by the 1994 government guideline as new automobile manufacturing regions. Although smaller in scale, the development strategy of the Small Three was

⁸² Guojia Xinxi Zhongxin (National Information Center) and Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2008* 中国汽车市场展望 (*China Automotive Market Outlook 2008*). 2008, Page 361.

basically the same as the Big Three - looking for foreign automakers as partners, trading the Chinese market for foreign technology and capital, and protecting the Chinese firms with the 50/50 partnership rule.

Beijing Automobile Works

BAW first started a venture with AMC in 1983 and brought in the CKD production of the model ‘*Cherokee*’. Sales of the ‘*Cherokee*’ were fair in the 1980s, but declined in the 1990s and came to almost nothing in the 2000s. Throughout the two decades of cooperation with AMC (merged with Chrysler in 1987), BAW did not start its own manufacturing division or outsource to any companies to develop its own models. In the 2000s it entered another venture agreement with the aggressive Korean auto company Hyundai, again bringing in the CKD system to produce passenger cars. Within five years between 2002 and 2007, the Beijing-Hyundai venture dominated automotive sales in the Beijing metropolitan area. However BAW simply enjoyed the benefits of being Hyundai’s passive partner in the JV, and did nothing about creating an indigenous model. As we have seen, the bluntest critic of the Chinese automobile policy, Lu Feng, severely rebuked the excuses given by state enterprises such as FAW and DMC for their passiveness in their JVs, and for their reluctance to take the initiative in forging China’s own brands of automobiles. Though he did not comment directly on Beijing Automobile’s inert role, the same criticism could be applied.⁸³

⁸³ Lu, Feng, *Fazhan Woguo Zizhu Zhishi Chanquan Qiche Gongye de Zhengce Xuanze*, 发展我国自主知识产权汽车工业的政策选择, (Policy Implications of the Self-development of Intellectual Property Rights in the Automobile Industry). Pages 125-140.

Tianjin Xiali

Under the State Department guidelines of 1987 pertaining to China's Automobile Industry, Tianjin Xiali was designated as one of the Small Three for integrating the various and scattered parts of the automotive industry in the district. The municipal government of Tianjin Xiali was tasked with selecting the best partner among various foreign automakers based on which offered the best core engine technology. After field studies of the Japanese vehicle engine factories, Daihatsu and Suzuki, the decision went to Daihatsu's 'Charade' S70 series, with its two to four cylinder engines and displacements from 550cc to 1300cc.⁸⁴ When the first car ran off the production line in 1986, the name 'Charade' was translated phonetically in Chinese by the then Mayor of Tianjin, Li Ruihuan,⁸⁵ as 'Xia- Li', meaning literally 'Hua Xia De Li' (China benefits).⁸⁶

Technically, Tianjin Xiali took a shortcut to build its small model by importing Daihatsu engines and CKD modules and components. This manner of production lasted until 1989 when Daihatsu sold its engine plant completely to Tianjin Xiali. Under the protection policy, Tianjin Xiali gained its market share by selling its sub-compact model 'Xiali' to rental car and taxi businesses, and grew impressively to a 50,000 unit production capacity by 1993. Thanks to the low selling price of 'Xiali', its low fuel

⁸⁴ Shu, San Shui, *Xiali Zhongguo*, 夏利中国, (*China Xiali*) (Sanshui Qiye Yanjiu Shuxi; Beijing: Dangdai Zhongguo Chubanshe, 2007). Page 22.

⁸⁵ Li Ruihuan moved to Beijing in 1989, after serving as mayor of Tianjin, and became a Standing Committee member of the Political Bureau of the CPC Central Committee, the most powerful political group in the Chinese government. He has been an influential figure in China's inner political circle since then.

⁸⁶ Shu, *Xiali Zhongguo*, 夏利中国, (*China Xiali*). Page 23.

consumption and the increased demand for city transportation, the taxi business in northern China helped the fast growth of Tianjin Xiali until the late 1990s when more restrictive exhaust air pollution standards were implemented.

In 1999 Tianjin Xiali obtained the green light to be listed on the Shenzhen Security and Stock Exchange, and issued stocks to trade for dispensable capital. Despite launching a new model, the 'Xiali 2000', in the following year, the market was unreceptive for several reasons. First, the private company Geely marketed its 'Haoqin' to compete for the lowest priced car in China, and seized market shares from Tianjin Xiali, which will be explained in Section 4.3 of Chapter 4. Second, China's entry into the WTO had lowered the duties on import models, which in turn lowered the selling prices on models sold by Chinese JVs, consequently pressuring the profitability of a low-end model like the 'Xiali'. Third, when the basic, entry-level economy 'Xiali' started to wear down, it could no longer inspire confidence in potential customers.

Unlike other globally dominant auto manufacturers, Japan's Toyota Motor Corporation did not try to establish a strategic base in China until the late 1990s. This slow start left it with a limited choice of Chinese partners to select from and match with its global standing and status. In the 1990s Toyota tested the Chinese market by establishing a JV in Sichuan Province to build agricultural tractors and vehicles. As explained earlier, the guidelines of the Chinese AIP of 1994 did not allow foreign automakers to form more than two JVs in China. Toyota had used up one of its possible two selections of a Chinese partnership and it could only seek one more partner in China for car building. Toyota had to use this option very carefully. In 1999 Daihatsu Motors sold a majority

share to Toyota, which opened a window of opportunity in China for Toyota. It could now use Daihatsu's engine technology to build new low-end models for sale in China, and at the same time use Daihatsu to look for another suitable partner in China.

On the Chinese side, although through its JVs with Germany's VW and Audi, FAW produced mid-size and full-size models, it was short of low-end models to complete its product line. In the 2000s FAW-VW found itself competing with SAIC-GM, and somewhat ironically with SAIC-VW. It decided it could use another, stronger global partner, and sought out Toyota to form a partnership. When both Toyota and FAW were looking for an alliance, Tianjin Xiali became a natural matchmaker. In 2000, FAW and Toyota entered an agreement to start a JV to produce sub-compact automobiles. Under Chinese government arbitration and mediation, Tianjin Xiali was merged with FAW to create FAW-Tianjin Xiali in June 2002. This opened a channel for FAW to continue to use Daihatsu's small engine technology in FAW-Tianjin Xiali, and helped Toyota to solidify its plan to form a JV plant in China with FAW to promote models of similar engines. The merger of Tianjin Xiali with FAW in 2002 increased the market share of FAW and reduced the Small Three to a Small Two, i.e. BAW and GAIG.

GAIG

In the 1980s, with China's free trade zone and planned economic development in Shenzhen in southern China, Guangzhou was assigned by the Chinese government as another base for the automotive industry, to be distinguished from the Yangzi River and Bohai districts that had been dominated by the Big Three - SAIC, DMC and FAW. GAIG is a focal point of the automotive business supported and empowered by the state

asset board of Guangdong province and Guangzhou city. Due to market and management issues, its initial cooperation in the 1980s with the French PSA group to build cars turned out to be a failure, which discouraged many foreign companies from venturing into southern China. Less central government supervision and freer manoeuvring by the local provincial government had frequently frustrated foreign investors until the late 1990s. However, as Guangdong province began to witness strong economic growth in the late 1990s, foreign companies, especially Japanese and Korean automakers, re-discovered that it would be to their advantage to form partnerships with the local government rather than state and municipal governments, which had more bureaucratic procedures.

Under the 1984 and 1994 guideline of the Chinese AIP guidelines, GAIG set up various JVs with Toyota, Honda, Isuzu and Hyundai Motors. After the influx of foreign capital and technology, GAIG's overall automotive ventures progressed rapidly: by 2006 its entire sales and production had reached more than 350,000 units, and in 2007 it ranked 45th out of 500 national companies in gross sales.⁸⁷

In 2003, the Guangdong provincial government officially approved its plan to designate Huadu district in Guangzhou as Huadu Automobile City, ensuring that foreign JV's' component factories and assembly plants would be established in a geographical cluster in Guangdong Province. Huadu city is located 22 kilometres from Guangzhou City and 12 kilometres from Guangzhou Baiyun International Airport. Huadu Automobile City is

⁸⁷ Zhongguo Qiche Baoshe, *Zhongguo Qiche Gongye Quan Jilu*, 中国汽车工业全记录, *Record of the Chinese Automobile Industry* (Beijing: Zhongguo Qiche Baoshe Press, 2005). Page 250

50 square kilometres in size and is designed as a complete automotive manufacturing centre, with vehicle assembly plants, parts_supply chains, R&D centres, dealerships, automotive product exhibitions, logistics and distribution centres, and import/export zones. Four major Japanese and Korean automakers and more than forty of their second and third tier component suppliers have established their businesses in Huadu since 2003, and since then Huadu city has been nicknamed ‘China’s Detroit’.⁸⁸ At the same time, the Japanese and Korean spare parts suppliers also moved in with their associated automakers and built up a strong component supply base in the same region. However, among global auto powers and their JVs with Chinese partners in the southern part of China there was only one indigenous Chinese automobile company, Bi-Ya-Di BYD, fighting for its survival, which will be discussed further in Chapter 5. The dependence on foreign, especially Japanese, technology and capital was very high for GAIG, despite its overall growth having been rapid in the 2000s. For instance, as indicated in Figure 3.9, Toyota owned more than 70 percent shares in the JV for engine production with GAIG overseeing the engine development. GAIG at the same time entered into JVs with Japan’s Honda, and Isuzu, and Korea’s Hyundai, as listed in Table 3.6, but GAIG has not manufactured its own independent automobiles or its own brand.

⁸⁸ Jia, Ke, *Zhongguo Qiche Diaocha, 中国汽车调查, (Investigation of Chinese Automobiles)*. Page 204.

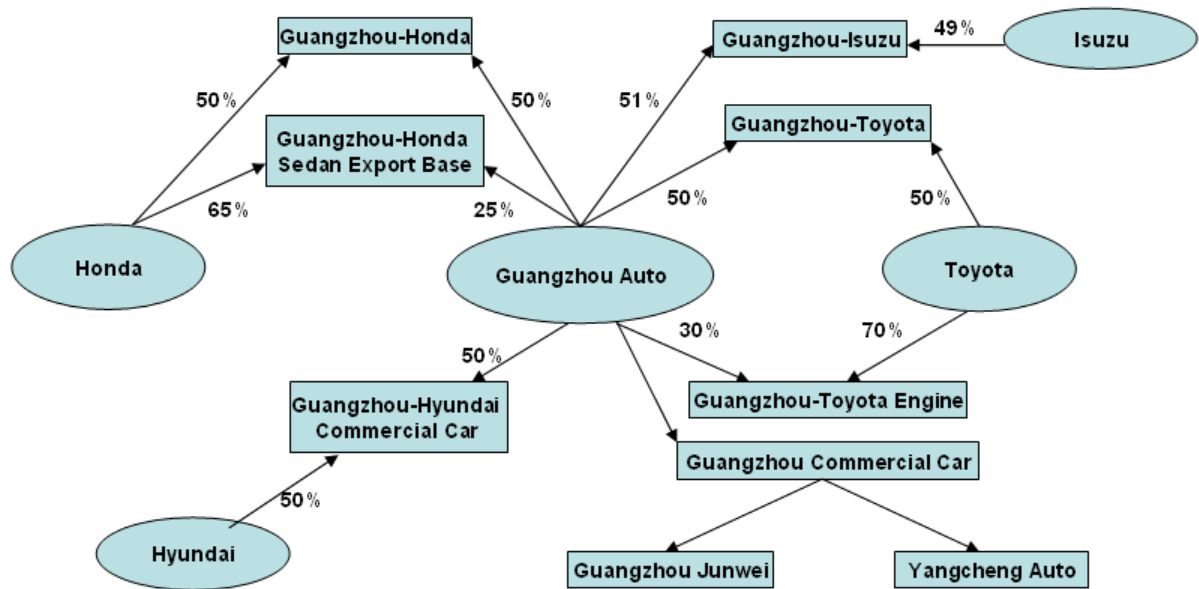


Figure 3. 9. GAIG and its venture distribution⁸⁹

⁸⁹ Zhongguo Qiche Baoshe (ed.), *Zhongguo Qiche Gongye Quan Jilu 1949- 2004*, 中国汽车工业全记录 1949- 2004 (Complete Records of the Chinese Automobile Industry 1949- 2004) (3; Beijing: Zhongguo Qiche Baoshe Press, 2005). Volume 3 Page 250.

Table 3. 6. GAIC and its JV distribution, 1998-2005⁹⁰

Chinese company	Foreign partners	Name of JV	Chinese company shares	Foreign partner shares	Starting Year	Products
GAIC	Honda	Guangzhou Honda Auto	50%	50%	1998	Sedan: Accord, Odyssey MPV, FIT, City
	Honda	Honda Motors (China)	35%	65%	2003	Sedan Export Base
	Toyota	Guangzhou Toyota Auto	50%	50%	2004	Sedan: Camry
	Toyota	Guangzhou Toyota Engine	30%	70%	2004	Toyota AZ series engine
	Isuzu	Guangzhou Isuzu Passenger Car	51%	49%	2000	Isuzu Gala series passenger car
	Hyundai	Guangzhou Hyundai Commercial Car	50%	50%	2005	Commercial Car Base

3.4.3. The Dominance of Joint Ventures in China

The Big Three and Small Three within the Chinese automotive industry had been set-up under government direction to cover various industrial regions in the country. The foundation of the industry is based on the manufacturing infrastructure for primitive military trucks, and agricultural machines left-over from the Kuomintang era, i.e. pre-revolution China. The Big Three's selection was not geographical, but rather a natural growth from each company's original set-up and evolution. The Small Three, on the

⁹⁰ Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2008*, 中国汽车工业年鉴 2008 (*China Automotive Industry Yearbook 2008*). Page 116.

other hand, were selected as projected automotive starting points based on population distribution and the capacity of neighbouring coastal regions to serve as component suppliers. Before the 1980s, both the Big Three and Small Three were formed without efficient production in mind. At best they could be considered as military vehicle factories with very crude production methods and with no advanced technology. During the 1980s, when the Chinese government allowed free access to foreign automakers, they began to expand their business in China by positioning themselves in the territories dominated by the Big Three and Small Three. They had to select one, or a maximum of two Chinese partners, among the limited choices available in accordance with the unrelenting Chinese automobile policies of 1984 and 1994.

During the period 1985-1997 the Chinese government had shaped and implemented its policy to introduce foreign technology into the automobile industry by inviting global partners to form JVs with delegated state automobile enterprises. This practice continued even after 2001 when China became a member of the WTO, but the need to promote China's indigenous automobile industry has long been felt by the state enterprises. Upon the formation of JVs, the Big Three and Small Three would be occupied in building assembly plants, component factories and sales networks. Very little attention was paid to developing China's own brand or technology. FAW, China's first automobile factory, had no models of its own in mass production and even the handcrafted production of the 'Hongqi' model was stopped in 1983. DMC and SAIC have produced most models from their ventures with MNCs, and GAIG and BAW have followed the same pattern. The only exception in the Small Three was FAW-Tianjin Xiali, 100 percent Chinese owned after purchasing the engine technology from Japan's

Daihatsu. Although it had not formed any JV with foreign companies, it did not upgrade the technology and produced no models with a self-developed engine. The state enterprises had entrapped themselves in the protected environment of JVs in the hope of trading the Chinese market share for foreign technology. The Big Three and the Small three had been major corporate tax payers, but in this period they made no efforts that would have helped them to forge their own brands, and instead left the work to be carried out by other private entrepreneurs or regional state companies. However, Chinese indigenous automakers finally started to respond to the need to produce China's own brand of automobile and technology. The rise of indigenous automakers soon filled this void and will be discussed in the next chapter (Chapter 4).

Table 3. 7. China's Passenger vehicle market shares of the JVs and indigenous automakers, Jan-Nov 2007⁹¹

Shares of JVs and Indigenous automakers	Rating	Company name	Output for Jan- Nov, 2007(in units)	Percentage (%)
		Total	4332659	100
JV (71.76%)	1	FAW-VW	444668	10.26
	2	Shanghai- VW	410675	9.48
	4	Shanghai-GM	263642	6.08
	5	DMC- Nissan	238566	5.51
	6	FAW- Toyota	237225	5.48

⁹¹ Guojia Xinxi Zhongxin (National Information Center) and Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2008* 中国汽车市场展望 (China Automotive Market Outlook 2008). Pages 360-361.

	7	Guangzhou Honda	228330	5.27
	8	DMC- Peugeot Citroen	199295	4.6
	10	Changan Ford Mazda	195168	4.5
	11	Beijing Hyundai	168315	3.88
	13	Guangzhou Toyota	154200	3.56
	14	Dongyue Auto (Shanghai- GM)	125185	2.89
	17	Chana- Suzuki	95004	2.19
	19	DMC Yueda Kia	86589	2
	21	DMC Honda	73356	1.69
	24	Honda China	39240	0.91
	26	Fujian- Dongnan	36417	0.84
	27	BMW Brilliance	32728	0.76
	28	SAIC-GM- Wuling	29578	0.68
	30	Nanjing-Fiat	18465	0.43
	31	SAIC Motors	17153	0.4
	32	Beijing Benz	15246	0.35
Domestic Company (28.24%)	3	Chery	302745	6.99
	9	Geely	195589	4.51
	12	FAW-Tianjin	167009	3.85
	15	Shenyang Jinbei	108174	2.5
	16	FAW-Hainan	102817	2.37
	18	BYD	89785	2.07
	20	FAW Car Co., Ltd.	77817	1.8

	22	Changhe Automobile	55352	1.28
	23	Chana Automobile	50708	1.17
	25	Hafei Automobile	39130	0.9
	29	Chongqing Lifan	26390	0.61
		Others		0.19

As can be seen in Table 3.7 above, as of 2007 the passenger vehicle market was dominated by most of the JVs of the Big Three, Small three and other SOEs (71.76 percent); the balance of the market, 28.24 percent, was assumed by the indigenous automakers. Out of the entire 24 passenger vehicle manufacturers, 14 manufacturers were JVs, whereas the 10 indigenous automakers shared the relatively smaller market. However, Chery Automobile Company (Chery) and Geely Automobile Company (Geely) ranked third and ninth respectively among all Chinese automakers, and jointly captured 11.5 percent of the whole passenger vehicle market. The next chapter (Chapter 4) will study the development of Chinese indigenous automakers, particularly Chery and Geely, followed by investigating the independently-developed production and performance initiatives of the Big Three and Small Three.

Chapter 4: The Rise of the Indigenous Chinese Automobile Companies, 1997-2007

This chapter examines the development of the Chinese domestic companies that have grown through their own financial capacities, and have not been involved financially with any multinational automobile companies in their setup. Whilst they may have adopted different technology and outsourced components from foreign corporations, they have striven to develop their own core technology for the engine. They have worked from the ground up to build their factories and produce vehicles, but have had difficulty in building a global name, which is essential in the automobile industry. To understand the history of the growth of domestic Chinese companies, many questions must be reviewed, such as: how the capital was obtained and to what extent these indigenous automakers have invested in the industry; how their technology was acquired and applied to the progress of production: how their leaders and operators, either state-appointed officials or private entrepreneurs, began their ventures; how government policy has driven their direction and affected their manufacturing activities; and how they competed with the protected state enterprises and their JVs with the MNCs. This chapter first examines how Chinese indigenous automakers began and their characteristics. This is followed by an explanation of the growth of two indigenous companies, Geely Holding Group (Geely) and Chery Automobile Company Ltd. (Chery), and an investigation of their distinctive indigenous nature. Finally it examines the growth of regional and provincial companies such as BYD, Brilliance Auto, and Great Wall, which each developed its own route.

4.1 The upsurge in Chinese indigenous automakers

Unlike France, the UK, and the US, which started their automobile industries from basic craft production between the turn of the nineteenth century and the 1910's, China went directly to mass production. Before the 1980s, the central government was hesitant at permitting foreign investment in China due to the fear of losing control over the industry as well as the market. In 1987 and 1988, the Chinese State Department approved six state enterprises for the manufacture of passenger and commercial automobiles in JVs with foreign companies, with the exception of two military factories. According to the seventh Five-year State Economic Plan issued by the Central Economic and Social Development Committee, automotive manufacturing was listed as one of the pillar industries, based on 'higher entry requirement, quantity of production and professionalism'.⁹² As we saw in Section 3.4 of the last chapter, the three major state enterprises selected were FAW, SAIC and DMC (the 'Big Three'), and the three provincial and municipal businesses were BAW, GAIG and Tianjin-Xiali (the 'Small Three'). When mergers and acquisitions started as a result of the consolidation of various factories, this government policy received severe criticism for its failure to establish or support an indigenous Chinese car industry.

⁹² Lu, Feng, *Fazhan Woguo Zizhu Zhishi Chanquan Qiche Gongye de Zhengce Xuanze*, 发展我国自主知识产权汽车工业的政策选择, (Policy Implications of the Self-development of Intellectual Property Rights in the Automobile Industry). Page 126.

In his report, Lu Feng pointed out the mistakes made by the Chinese government in limiting state enterprises to the 'Big Three and Small Three' and particularly in its intent of 'trading market for foreign technology'.⁹³ Lu argued that, although the intent behind the JV partnerships with foreign companies was to acquire their automotive engineering knowledge, the foreign companies prevented core technology from being transferred to Chinese collaborators. The Chinese Big Three and Small Three, while enjoying the sharing of profit from the dominance of the Chinese automotive market, did not (and were unable to) develop or produce any models independently. Everything they made was the products of JVs. Consequently, China forfeited 50 percent of the market to the foreign automakers without the gain in the intended technology transfer to enable China to develop and manufacture its own automobiles. The government had a policy of regulating the set-up of JVs, but was unclear regarding how technology from MNCs could be passed to the Big Three and the Small Three. The administrative methods adopted by the government replaced the free market mechanism, which undermined the motivation of state enterprises to develop car models independently.⁹⁴

When the JVs were formed between Chinese companies and MNCs in the 1980s and 1990s, passenger vehicles were still primarily the property of the government and their purchase was still subject to the government's budget. Accompanying the Gross Domestic Product (GDP) growth of almost two-digit percent yearly since 1997, the domestic demand of passenger cars had soared by 20 percent. Even though the government continued to discourage private vehicle ownership at the time, individuals

⁹³ *Ibid.*, Page 127.

⁹⁴ *Ibid.*, Page 128.

did in fact begin to purchase their own cars. As Table 4.1 shows, private ownership of cars grew from 15.89 percent in 1996 to 25.83 percent in 2003 and upward again to 26.26 percent in 2006.⁹⁵ The private ownership of vehicles exceeds 23 million units in 2006, in contrast to being practically zero at the beginning of the 1980s.

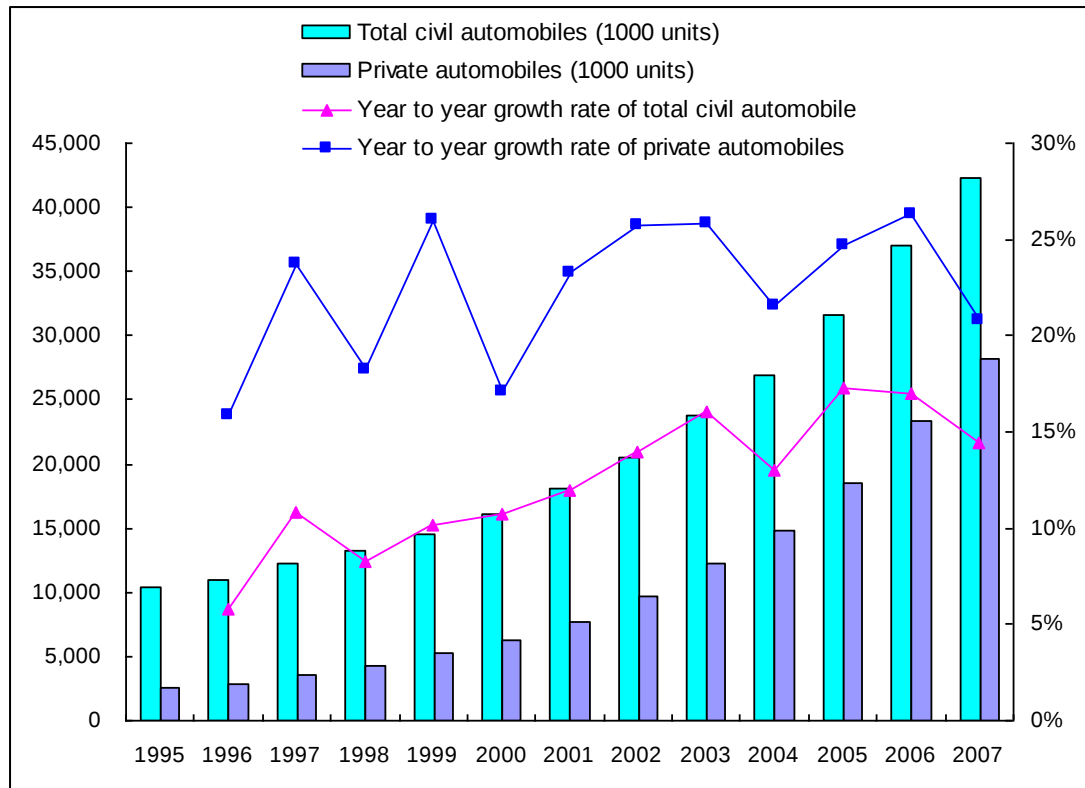
**Table 4. 1. China's registered civil and private automobiles,
1995-2007⁹⁶**

Year	Total civil automobiles (1000 units)	Private automobiles (1000 units)	Year on year growth rate of total civil automobiles (%)	Year on year growth rate of private automobiles (%)
1995	10,400.0	2,499.6		
1996	11,000.8	2,896.7	5.78%	15.89%
1997	12,190.9	3,583.6	10.81%	23.71%
1998	13,193.0	4,236.5	8.23%	18.22%
1999	14,529.4	5,338.8	10.13%	26.02%
2000	16,089.1	6,253.3	10.73%	17.13%
2001	18,020.4	7,707.8	12.00%	23.26%
2002	20,531.7	9,689.8	13.93%	25.71%
2003	23,829.3	12,192.3	16.06%	25.83%
2004	26,937.1	14,816.6	13.04%	21.52%

⁹⁵ Guojia Xinxi Zhongxin (National Information Center) and Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2008* 中国汽车市场展望 (*China Automotive Market Outlook 2008*). Page 432. Civil automobiles include private ownership and governmental vehicles used for civilian purposes. The term 'civil' automobile refers to vehicles used by civilians.

⁹⁶ *Ibid.*

2005	31,596.6	18,480.7	17.30%	24.73%
2006	36,973.5	23,333.2	17.02%	26.26%
2007	42,290.0	n/a	14.39%	n/a



**Figure 4. 1. Growth rate of China's civil and private automobiles
1995-2007⁹⁷**

The increase in private ownership of cars between 1995 and 2007, that Figure 4.1 indicates, attracted private entrepreneurs and certain local governments to engage or invest in the automobile manufacturing business. In the case of the former, investing in the car manufacturing business had become possible, since the government could no longer dictate the supplier of individual citizen's automobile purchases. In the case of the latter, provincial governments provided incentives to promote regional manufacturers to produce and dominate the provincial automobile market.

⁹⁷ *Ibid.*, page 432.

Private companies started their automotive businesses under extreme difficulties and the risk of failure was considerable. For instance, Geely, which will be examined later in this chapter, had almost miraculous success considering it started with no capital or technology. BYD, a successful company in the rechargeable battery industry, moved in another direction by investing in the automotive business with its technology in alternative energy. Another company, Great Wall Motors, began its business as a vehicle modification factory and quickly switched to manufacturing pickups and SUVs. At the regional government level, there was Chery who passed the strict entry barriers set by central government and obtained its own manufacturing permit with challenging efforts. Subsequently, it managed to produce its own vehicle brand and technology for export markets, and established international cooperation.

In the early 1990s, Chinese JVs with foreign automobile companies produced sub-compact vehicles to test out the market with models such as the ‘Santana’ of SAIC-VW, the ‘Jetta’ of FAW-VW, and the ‘Fukong’ from DMC-Peugeot. These three models dominated China’s sub-compact passenger car market for almost a decade (1991 to 1999). However, customer satisfaction with regard to the JVs’ service in sales, after-sales and the supplying of parts was low and there were frequent complaints. In some areas, some JVs did not establish a complete network of authorised dealers to serve their clients, which caused the poorly motivated sub-dealers to look for different products to sell. Although the JVs were later compelled by Chinese government policy to build up the 4S system⁹⁸ throughout their dealer networks in 2004, the large and unmet demand

⁹⁸ 4S stands for sales, service, spare parts and survey (after sales), a common standard used in Western countries. According to the memorandum Gongshang Zongju ling, qiche

for passenger cars between 2000 and 2003 had already attracted private entrepreneurs, and even state-owned-enterprises, into the car manufacturing industry. Companies such as Geely, Chery, BYD and Great Wall, all entered the market at this time and built factories with their own operational philosophy. They realised that the dominance of Chinese JVs with foreign MNCs in the automotive market of China did not match the Chinese consumer mentality; and that consequently there could be a considerable market for indigenous brands. Numerous small companies rushed into the vehicle assembling operation and, by 2007, there were more than 100 car manufacturing companies in China. Amongst these companies, 80 percent of their annual production did not exceed 100,000 units, and more than 80 companies manufactured fewer than 50,000 units yearly.⁹⁹ In this thesis only a few indigenous companies have been selected to review for their growth of sales, investment in the R&D and human resources, their building of automotive technology and the challenges faced. Although these companies were generally young and inexperienced, they were energetic and grew rapidly. They exploited the advantages the booming Chinese economy engendered and learned from the experience of China's neighbouring countries, particularly Japan and Korea, in their factory installation, human resource training and automotive component technology. Financially, these companies were not involved in any JV with foreign companies or under the control of the MNCs.

pinpai xiaoshou guanli shisi banfa, number 10, 2005 clause 3, Chapter 2, issued by the National Reform and Development Commission, all new passenger car dealer must establish the 4S system in order to pass the requirements for automobile dealership. ANON. National Reform and Development Commission State Council, (2005) 'Qiche Pingpai Xiaoshou Guanli Shishi Banfa, 汽车品牌销售管理实施办法 (Automobile Brands Sales Rules and Regulation)' Ministry of Commerce, National Development and Reform Commission, State Administration for Industry & Commerce, <<http://www.pcauto.com.cn/news/jtfg/0503/236848.html>> 6 May 2009

⁹⁹ Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2008*, 中国汽车工业年鉴 2008 (*China Automotive Industry Yearbook 2008*). Pages 476-477.

In terms of geographical distribution, they were Chinese domestic companies that originated in various provinces. Although there were many automotive companies, only a few engaged in the large-scale manufacturing of passenger cars. As shown in Figure 4.2, as of 2007, spare parts suppliers comprised 69.1 percent of the entire automotive-related business, vehicle modifying manufacturers stood for 19.2 percent and manufacturers that engaged in automobile manufacturing had only 4.4 percent.

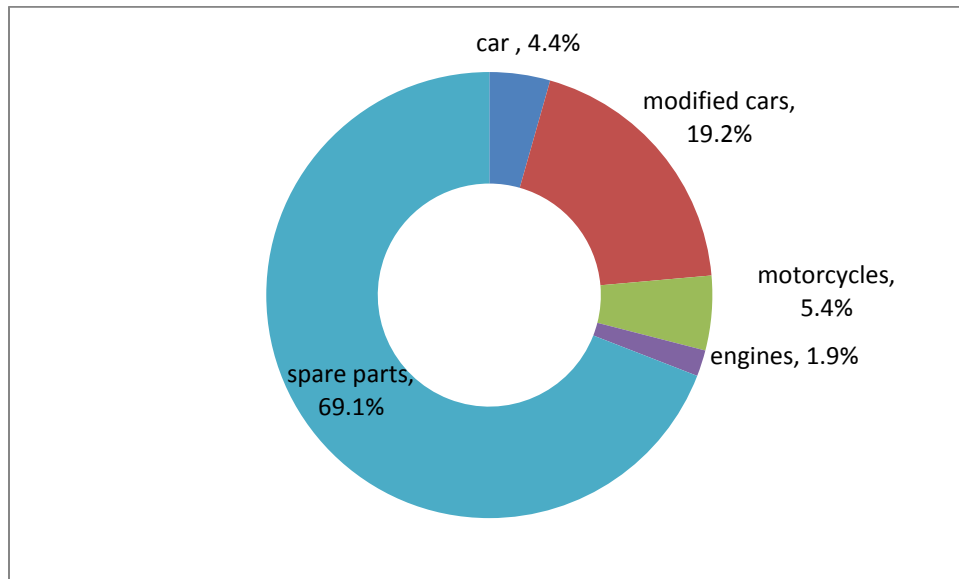


Figure 4. 2. China's automotive companies' by category, 2007 ¹⁰⁰

As discussed in Chapter 1, the term 'Chinese indigenous automobile industry' needed to be defined in order to understand the complexity of China's general automobile industry.

¹⁰⁰ Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2007*, 中国汽车工业年鉴 2007(China Automotive Industry Yearbook 2007). Page 465.

As stated there, the term ‘Chinese indigenous automobile company’ refers to a Chinese domestic automobile company that is 100 percent capitalised by Chinese ownership and whose manufacturing production is operated by Chinese management. This thesis intends to better describe these companies as a model and examine the growth of the Chinese indigenous automobile industry by summarising their characteristics, accounting for their progress towards achieving financial independence and their capacities in automobile technology development. These characteristics include:

a) Independence from Foreign Direct Investment and JVs

Firstly, the companies under this study must be in active production of automobiles and must be 100 percent capitalised and held by Chinese owners, whether this is through private, state, local or municipal government ownership. These companies must also produce their own car models without sharing any common vehicle platform or components with any other model that is produced in the existing JVs, and their factory productions must be operated and managed by indigenous personnel. Under this definition for the period covered by this study, twenty-two companies meet the selection criteria. Their factories were distributed across all Chinese provinces with the exception of eight: Qinghai, Yunnan, Gansu, Shanxi, Shaanxi, Guangdong, Jiangsu, and Henan, and five autonomous districts: Xinjiang, Ningxia, Tibet and Guangxi. This thesis has selected the indigenous automakers that held the top ten positions in production as of 2007, with minimum annual production of 30,000 units.

b) Complex affiliation with a holding parent company

These selected companies are not simply independent and individual producers. A further examination on their background reveals complexity regarding their affiliation with other companies in JVs with foreign automakers. Some of the Chinese partners in foreign JVs have created separate entities that were financially independent from the parent JV and able to produce models using their own brands. Most of the car making technology used in the JV, sometimes patented and protected globally, was considered as common property which belonged to the holders of the intellectual property only within the JV. However, it was a common practice in the JV for the Chinese professional managers to be re-assigned to the affiliated companies of the parent JV. The exposure to technological information through personnel transfer between the company in a JV and its autonomous operation was common and inevitable but it resulted in many legal claims by foreign partners in JVs during the 2000s, which will be discussed later in this chapter.

c) Dual entity as manufacturer and sales distribution company in JV

A few ‘senior’ Chinese firms exploited their advantageous JV status to distribute their foreign auto partners’ imported models that were not manufactured in China. Although the JV initiative was intended to produce cars in China, deals were signed with the foreign automakers to import certain popular models from abroad and sell them domestically as supplementary products. This had a twofold advantage: it broadened consumer choice and misled consumers into thinking that the imported models were manufactured by Chinese manufacturers in JV operations. After China became a WTO member in 2001, the Chinese indigenous automakers faced stiff competition from the

imported models distributed by their Chinese rivals through their JVs with foreign companies.

d) Merger and acquisition

Many indigenous automakers companies benefited from the other companies' financial failures. The directives from the central government to consolidate smaller auto manufacturers presented an attractive opportunity for indigenous automakers to acquire skilled labourers and state-owned companies. Through mergers and acquisitions, these companies re-packaged themselves and went public to raise capital. Because the car has often been considered as a high value consumer item and automobile manufacturing requires intensive capital, the strategy of going public worked effectively in the Chinese stock markets. Private companies, such as Geely, Brilliance Auto and Great Wall Motors were the direct beneficiaries of merger and acquisition policies.

e) Automobile making as a national pride industry

The terms of the contract with foreign countries in JVs were stipulated to last for 25 years or more, with an option to extend. On the surface, Chinese companies seemed to have access to the automobile technology during the term of the JV. But access to core technology, such as the engine and transmission, was subject to the discretion of the multinational automakers that owned it. The Chinese partners in the JV could benefit from manufacturing the components, but remained unable to develop any complete model independently from the JV they partnered with. Certain indigenous Chinese manufacturers, however, built their own brands with their own engineering design that exceeded the expectation of the Chinese public. Two companies, Geely and Chery,

emerged as national champions in the indigenous automobile industry. They have established colleges and training centres to train their own human resources and drawn up expansion plans for exporting their products. By 2003, these indigenous automakers had already sold automobiles to more than 30 countries and built China's first overseas assembly plants. Out of 400 candidates, Geely was recognised as one of the '25 most respected Chinese Enterprise' by the Chinese Economic News and the Beijing University in both 2006 and 2007.¹⁰¹ Chery was also praised as the only national company that could compete against the foreign automakers. In this chapter, these two companies, Geely and Chery will be examined in detail as they represent models for the development of the Chinese indigenous automakers.

4.2 Geely Automobile

'...Please allow the privately-owned business to dream of producing a car. I do not need a single penny of support from the government, or a loan from the bank in my investment of billions; I do not want the government to share any risk. Please just give me an opportunity to fail. I firmly believe the flag of the future of China's automobile industry

¹⁰¹ ANON. Phoenix Satellite TV, 2008, '2007 Niandu Zhongguo Zuishou Zunjing Qiye Pingxuan Banjiang, 2007 年度中国最受尊敬企业评选颁奖 (The Most Respected Enterprises in China, 2007 Award Ceremony)', <http://phtv.ifeng.com/phinfo/200804/0429_45_515612.shtml>, accessed 15 June 2009.

*will be carried by the privately-owned enterprises...*¹⁰² *Li Shufu, Geely's founder and CEO*

When Li made the above remarks, he was desperately applying for a manufacturing permit to produce cars, for which he had been fighting for years. At the time of writing in 2009, Geely Automobile is the only privately-owned manufacturer to capture a significant market share in the Chinese automobile industry. The founder and CEO, Li, has been considered by many as a 'mad man', an 'automobile fanatic', and 'China's Henry Ford'.¹⁰³ How he started his automobile business deep within the prohibitive Chinese economic system and survived through the fierce and tough competition is the stuff of legend. This section focuses on Li's personal involvement in and impact on Geely Automobile's growth, how Geely acquired the capital and technology for the automobile manufacturing business, and the strength and capacity of Geely as an indigenous Chinese automobile maker.

As shown in Table 4.2, Geely ranked ninth in terms of passenger vehicle manufacturer in China as of November 2007. It maintained the eighth and ninth positions during the three year period 2005 to 2007, but it was one of the only two indigenous automakers, together with Chery Automobile (also marked in red in Table 4.2), in the list of top ten producers¹⁰⁴. Geely's annual production in 2006 was 205,440 units, trailing just behind

¹⁰² Xiang, *Zhongguo Qiche Yingxiao Fengyun Lu*, 中国汽车营销风云录 (*Chinese Automobile management and Marketing*). Page 29.

¹⁰³ Zheng, Zhuoshi, *Qiche Fengzi Li Shufu*, 汽车疯子李书福 (*Automobile Craze Li Shufu*) (Beijing: China CITIC Press, 2007). Pages 231-232.

¹⁰⁴ Guojia Xinxi Zhongxin (National Information Center) and Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2008* 中国汽车市场展望 (*China Automotive Market Outlook 2008*). Page 93.

the JV of the state enterprise FAW-Toyota (219,465 units), but better than the other JV DMC-Nissan Automobile Company (203,537 units). It was impressive for Geely to capture 4.9 percent of the passenger vehicle market, considering its vehicle manufacturing had barely begun less than ten years ago.

Table 4. 2. Sales, market share and ranking of Chinese passenger car manufacturers, 2005-November 2007¹⁰⁵

Rating	2005			2006			2007, Jan~Nov		
	Company	Sales in unit	Market share (%)	Company	Sales in unit	Market share (%)	Company	Sales in unit	Market share (%)
1	Shanghai General Motors	325,198	10.20	Shanghai General Motors	409,693	9.70	Shanghai General Motors	430,279	9.00
2	Shanghai Volkswagen	287,118	9.00	Shanghai Volkswagen	352,908	8.40	FAW-Volkswagen	428,445	9.00
3	FAW-Volkswagen	277,097	8.70	FAW-Volkswagen	347,100	8.20	Shanghai Volkswagen	407,119	8.50
4	Beijing Hyundai	233,668	7.30	Chery Auto	305,236	7.20	Chery Auto	355,926	7.50
5	Guangzhou Honda	230,768	7.30	Beijing Hyundai	290,012	6.90	Guangzhou Honda	264,120	5.50
6	FAW-Xiali	193,008	6.10	Guangzhou Honda	260,096	6.20	FAW-Toyota	247,124	5.20
7	Chery Auto	189,158	5.90	FAW-Toyota	219,465	5.20	DMC Nissan	238,269	5.00
8	DMC Nissan	157,516	5.00	Geely Auto	205,440	4.90	Beijing Hyundai	206,677	4.30
9	Geely Auto	150,315	4.70	DMC Nissan	203,537	4.80	Geely Auto	197,203	4.10
10	FAW-Toyota	147,438	4.60	DMC Peugeot Citroen	201,318	4.80	Changan Ford	190,831	4.00

¹⁰⁵ *Ibid.*, Page 93.

4.2.1. Li Shufu's early and financial background

Li was born in 1964 in Taizhou, a mountainous farming village in the heart of Zhejiang Province. There is little information about his upbringing before his emergence in the Chinese automotive industry, but it is known that he spent much of his youth in the early 1980s working in manual labour, including jobs in farming, fish hatcheries and swine husbandry. When Deng Xiao Ping adapted the open door economic policy in 1978, the Chinese farmers were among the first to take advantage of the opportunity to pursue personal fortunes and wealth in the free market. Li was one of the farmers who took advantage of this opportunity. He worked on the farm during the day and sold clothing buttons as way of making extra money in the evenings. As a dreamer and gambler from the start, he decided to leave behind the low incomes typical of the rural economy. After graduation from high school, he borrowed 120 RMB from his father to work as a freelance photographer on the street.¹⁰⁶ When he made his first small fortune, approximately 2000 RMB, Li opened a photo shop. Not long after this he discovered a better way to make profits by straining the dissolved film development chemicals and collecting the silver contents left over from the emulsion process. He closed his own photo shop, venturing into a wholesale business by collecting silver scrap metal from the entire photo shops in Taizhou.

It was the turning point in his career when he learned how to make quick money by collecting precious metals such as gold and silver from the scraps found in dumped electrical appliances markets. Because the private trade of silver and gold was prohibited

¹⁰⁶ Zheng, *Qiche Fengzi Li Shufu*, 汽车疯子李书福 (*Automobile Craze Li Shufu*). Page 6.

by the Chinese government, Li had to carry this business on the black markets. As more people followed suit in the scrap business in the late 1990s, Li shifted to the business of manufacturing a basic refrigerator. As Li entered a shoe repair shop for his torn shoes he saw the patch men in the shop assembling sheet metals of components for the shop's refrigerator. Copying the idea, he and his brother Li Shufang established a refrigerator component factory in Taizhou and did the same at home to sell parts to a local refrigerator factory. His brother managed the factory and Li was responsible for marketing and sales. Their primary customers were in Hangzhou and annual sales reached 9 million RMB (approximately US\$1.2 million) in the mid 1980s, rising to 50 million RMB (approximately US\$6.3 million), with a profit of 600,000 RMB¹⁰⁷. It seems that actual sales were deliberately under-declared for tax reasons. As the Chinese government revised a policy to restrict the over-populated refrigerator factory sector in 1989, Li shut down his business and went to Hainan Province to go into real estate with about 50 million RMB, a sum that he could not have made in the reported accounting of his refrigerator business.

Li's investment in Hainan Province was a complete failure due to the sudden macro-economic controls instituted by Premier Zhu Rongji which were meant to regulate speculation in the housing market. After losing a great deal of money, Li enrolled at Shenzhen University to earn a degree. Li felt that his lack of a university education was a shortcoming that had contributed to his investment failures. It was at Shenzhen University that he met Tang Jinsheng, a clever scientist, who had won many awards for

¹⁰⁷ *Ibid.*, Page 13.

invention and automobile-related patents. Tang's experience came from his time in a military infantry tank division and he had later visited San Francisco University for further education in automotive engineering. He started a small factory called Zhong Hua Qi Che (or China Motors) that made basic automobile models with plastic body panels, which he sold to the Beijing Taxi Company. Unfortunately the car model still used old carburetion technology, and could not compete with VW/FAW's Santana model, which adopted the more advanced fuel injection technology. Before Tang was forced out of the market, his college friend, Li, purchased a car from China Motors.

Driving his first car back home from Shenzhen to Taizhou, Li was struck by the idea of producing his own automobile. Li learned that Tang's failure was primarily financial and felt that he could overcome these same difficulties. So he decided to accumulate capital once again. Li started another construction material business with his brother, Li Shubing, in 1990, which sold materials to the rebounding real estate market. This business earned him a great fortune and by 1993 gross sales had reached 70 million RMB. However, once more competition followed suit, weakening Li's market share and shrinking his profit. As a result, Li resolved to engage himself in a business that did not invite as many rivals.

In the spring of 1993, Li started a motorcycle manufacturing business. By the 1990s, the motorcycle business in China had established its foundation as there was an increasing demand for short distance transportation within and between cities. Li intended to capitalise on this opportunity by purchasing a recently bankrupt motorcycle factory. Within a few months, based on Taiwan's Guanyang motorcycle product, he successfully

produced a model called Hua Tian which sold well. Li named the new company Hua Tian (China Honda) with the intention of suggesting similarities with the Japanese car company Honda (Honda's second Kanji, an adopted Chinese character in the Japanese language, is the Chinese character 'Tian'). It was obvious from the beginning that Geely used Honda as its model for creating a successful motorcycle manufacturing business. Honda's business model would also lead Li to transform his fledgling motorcycle enterprise into a car company. It is necessary to obtain a manufacturing permit to produce motorcycles in China and the permit was difficult to obtain due to government bureaucracy. However, the Chinese government did not have a policy in place to prevent a party who purchased a bankrupt factory from also acquiring its permit to manufacture cars. Even though the idea was risky, Li thought he could produce anything he wished regardless of whether or not he obtained the manufacturing permit.

As we have seen, in the 1990s, the smuggling of foreign automobiles was rampant in China. The situation only came under control in 1997 when the Chinese government determined to put a stop to this practice. The automobile, however, was still in great demand, and this motivated Li to pursue a career in automotive manufacturing. Li had made and lost his fortune through many different ventures. He had been a freelance photographer, scrap metal collector, refrigerator manufacturer and decorative materials manufacturer and distributor. But none of these businesses required as much capital as motorcycle and car manufacturing. When Li and his brother founded the refrigerator factories, there was only a verbal agreement regarding the percentage of share holding. According to Li's brother, Li owned 50 percent while Li Xubing owned 30 percent, and another brother, Li Shutong, 20 percent. Only in 1993, when the Li brothers formed the

Huangyan Geely Group motorcycle factory and started to amass fortunes, did it become vital to put in writing the exact percentage of shares that each man owned. In May 1996, Huangyan Geely Group was renamed Zhejiang Geely Group, in which Li and Li Xubing jointly owned 70 percent, while the other two brothers, Li Shufang and Li Shutong, owned 30 percent.¹⁰⁸ By 1996, Geely's motorcycle sales exceeded 200,000 units, which made them one of the major motorcycle manufacturers in China.¹⁰⁹ How Li acquired the capital to build his first automobile remains unknown to the public. However, what is known is that the primary problem that Geely faced was a shortage of capital. In 1998, Li used the venture capital of his network in Taizhou County to share the cost and risk. He subcontracted manufacturers for the automotive body panel and engine unit separately using privately-run enterprises head by individuals under the manufacturing permit of Geely Automobile. In turn the venture capitalists shared the profit from the sales of the models produced in the invested factories proportionally. This was a complicated accounting system, but Li had no choice but to carry out the production in this manner.¹¹⁰

In 2001 a complaint was filed against Li by a venture capitalist named Li Guoshun, also from Taizhou, accusing Li of malpractice and suspect accounting. Under Chinese civil law, the subsidiary factory under the car manufacturing company is not regarded as a legal entity in civil suits. Because of this, Li Guoshun did not win the case but chose to withdraw his factory from the Geely manufacturing system. He formed a new company

¹⁰⁸ Zheng, *Qiche Fengzi Li Shufu*, 汽车疯子李书福 (*Automobile Craze Li Shufu*). Page 37.

¹⁰⁹ Lu, Feng, *Fazhan Woguo Zizhu Zhishi Chanquan Qiche Gongye de Zhengce Xuanze*, 发展我国自主知识产权汽车工业的政策选择, (*Policy Implications of the Self-development of Intellectual Property Rights in the Automobile Industry*). Page 67.

¹¹⁰ Interview # 1, Geely Hangzhou, July 2007

called Guo Tong Company, continuing to supply Geely simply as a vendor to protect his interests. It was a major blow to Li as Guo Tong became a vendor of auto body panels, which did not guarantee the consistent quality necessary for a production line. Luckily, by then Geely's model had started to sell well, solving his financial problems. In the meantime Li wasted no time building his own automobile body factory.

4.2.2. Buying a manufacturing permit

Under Chinese law, one must file for a permit from the government for each car model that one wishes to produce. When Li planned to manufacture Geely's first model, 'Haoqin', he still did not have a permit and decided to risk doing it covertly. An opportunity came when he learned through a friend that the Deyang Prison in Sichuan Province had a manufacturing permit for producing light passenger vans. Li immediately rushed to deal with the prison and started a partnership with them, which allowed him to infuse capital and to own 70 percent of the company, which was named Sichuan Boying Automobile Manufacturing Company. Shortly afterwards Li bought the remaining 30 percent and moved the factory to Taizhou, fully in possession of the long-awaited legal permit to produce automobiles.

Even though the permit Li obtained was restricted only to producing the light passenger van, Li's plan was to build a three-door passenger car. To avoid unnecessary media attention, Li chose to make his production and assembly line highly confidential. In fact Geely assembled its first car with an engine and chassis bought from Daihatsu (then a Japanese engine factory in Tianjin before it merged with Toyota) and the body was actually made with sheet metal by auto body craftsmen. The production was in a small

quantity and almost every car's bodywork was assembled by hand. As Geely's 'Haoqin' started to sell, the blueprint was then designed and produced by the newly-hired automotive engineers.¹¹¹ To Li, building a car was rather easy. His bold public was assertion was that 'a car is just a motorcycle with two extra wheels'.¹¹²

How Li conquered his financial difficulties is difficult to understand. First of all, he did not have enough capital to build the factories, forcing him to contract venture capitalists for assembly line work. Second, he was unable to get any loans from the bank because he did not even have a car manufacturing permit from the government. In August 1998, when Geely's first production batch of the model 'Haoqin' came off the assembly line, Li sent out 700 invitations to government officials, both central and regional, expecting a warm welcome and good reception from the media. None of the government officials who knew that Geely's car manufacturing was done without the appropriate permit dared to accept the invitation for fear of being connected with Li's illicit business. Li was frustrated, finding his only support came later from Deputy Governor Ye Baorong, who had gone all the way to Beijing to apply for the official production permit for Geely.¹¹³

The assembly line production of the three-door sub-compact model, 'Haoqin', with its four cylinder gasoline engine, was the beginning of more difficulties. Geely's new model had no market, no sales network and inspired no confidence or interest from consumers.

¹¹¹ Zheng, *Qiche Fengzi Li Shufu*, 汽车疯子李书福 (*Automobile Craze Li Shufu*). Page 72.

¹¹² *Ibid.*, Page 71.

¹¹³ ANON. Zheshang Wang, 2007, 'Minqi Zaoche Diyiren - Li Shufu, 民企造车第一人--李书福 (The Private Enterprise to Manufacture Cars -- Li Shufu)', <<http://biz.zjol.com.cn/05biz/system/2008/07/03/009691997.shtml>>, accessed 15 June 2009.

However, for many first-time car buyers in China in the 1990s, what it did have was an attractive low price, approximately RMB 50,000, which was about half the price of the comparable model 'Xiali' made by Tianjin Auto Works. As seen in Figure 4.3, the mean price of Geely's product ranged from 43,000 to 69,000 RMB (or US\$6500 to \$8600) during the period 2001 to 2007. Geely's component and parts suppliers were mostly from Taizhou and Wenzhou, from China's secondary cities, which meant a price advantage. According to Lu Feng, the cost of Geely's 'Haoqin' component and parts was between one third and even one half of those of imported parts.¹¹⁴

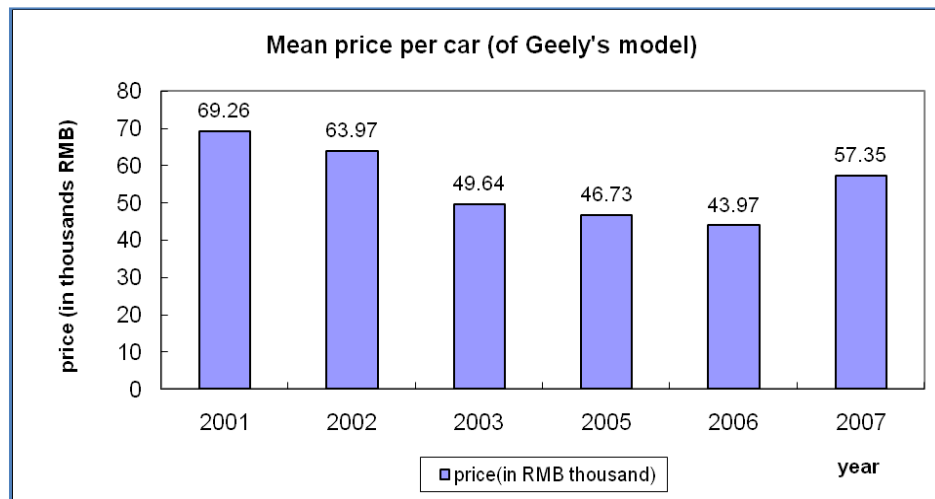


Figure 4. 3. Mean car price of Geely's model, 2001-2007¹¹⁵

¹¹⁴ Zheng, *Qiche Fengzi Li Shufu*, 汽车疯子李书福 (*Automobile Craze Li Shufu*). Page 70.

¹¹⁵ *Zhongguo Qiche Nianjian*, 2002-2007, (China automotive year book) 2002, Pages 381,410; 2003, Pages 415, 439; 2004, Pages 407, 430; 2005, Pages 480, 503; 2006, Pages 506, 437; 2007, Pages 477, pages 500, and Jiang, Xuelian, 2007 'Zhongguo Qiche Shichang Zhanguo Xingshi Fengxi: Jili Qiche Pian, 中国汽车市场战国形势分析: 吉利汽车篇 (Analysis of the Fierce Competition in the Chinese Automobile Industry: Geely)', *China Auto Market*, 5, 2007.

The model Tianjin ‘Xiali’ had a reputation for poor quality and Li took the opportunity to exploit this. He stressed that Geely’s car was just for transportation and that quality was not its primary selling point. Compared with Tianjin ‘Xiali’, which shared the same four-cylinder engine and platform as Geely’s ‘Haoqin’, the former did seem to be a better bargain. Li’s claim that he would make the cheapest car in China quickly earned Geely fame and popularity. Geely’s sales had been low until 2002, when it surged to 10,008 units for the first two models ‘Haoqin’ JR6360 and HQ6360, and together with other models ‘Merrie’ MR6370 and MR7130 amounted to 47,800 units.¹¹⁶ As seen in Figure 4.4, production rose from less than 10,000 units in 1999 to 216,744 units by 2007, more than 20 times that in less than ten years. On the other hand, it is also noticeable that the growth rate dropped sharply from 131.87 percent in 2000 to 4.55 percent in 2007, the result of competition from both JVs and domestic automakers and from increasing costs.

¹¹⁶ Lu, Feng, *Fazhan Woguo Zizhu Zhishi Chanquan Qiche Gongye de Zhengce Xuanze*, 发展我国自主知识产权汽车工业的政策选择, (Policy Implications of the Self-development of Intellectual Property Rights in the Automobile Industry). Page 71.

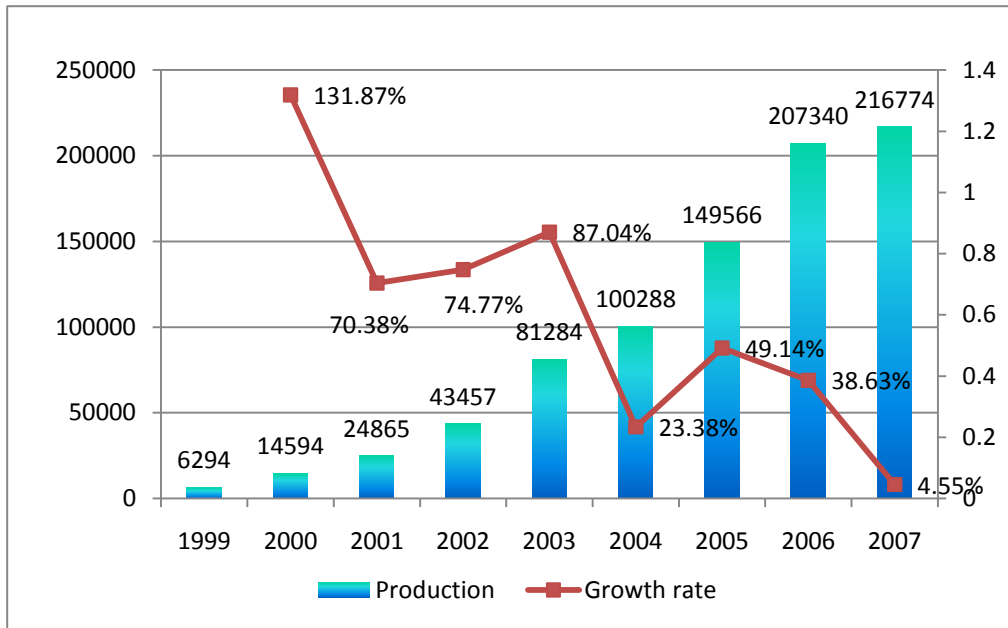


Figure 4. 4. Geely vehicle production (in units) and growth rate, 1999-2007¹¹⁷

Geely's automobile business started to take off when on 9 November and 26 December 2001 their models 'JL6360', 'HQ6360', 'MR6370' and 'MR7130' were officially listed in the bulletin published by National Economic and Trading Committee. This made it the first privately-owned automobile factory to obtain a permit to produce cars, meaning that it was no longer a clandestine manufacturer. As annual sales reached 47,400 units in 2004, it was listed in the National Fortune 500 and ranked 28th in gross revenue in Zhejiang province. Figure 4.5 indicates Geely's upward trend in sales during the period

¹¹⁷ Zhongguo Qiche Jishu Yanjiu Zhongxin, Zhongguo Qiche Gongye Xiehui (ed.), *Zhongguo Qiche Gongye Nianjian 2000-2007*: 2000, Page 325; 2001, Page 364; 2002, Page 381; 2003, Page 415; 2004, Page 407; 2005, Page 480; 2006, Page 506; 2007, Page 477.

of 2000-2007, also showing, however, how its market share of the indigenous automakers production started to decline slightly from 2004.

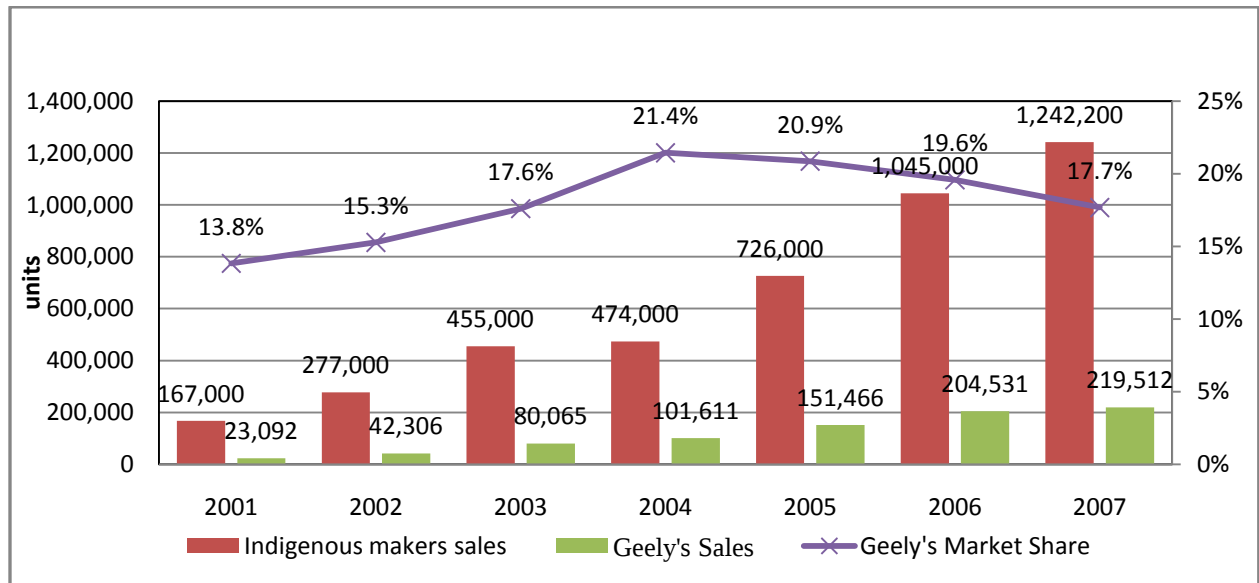


Figure 4. 5. Geely's sales and market share of indigenous automakers production, 2000-2007¹¹⁸

In 1998, Geely claimed that their annual production capacity was 25,000 units. To reach this level, Li needed to find other ways in addition to his low price policy to move his products. Instead of marketing through network dealers, Li enticed the dealers to pay for their orders with a lump sum of cash in return for a large discount on the cars. This way

¹¹⁸ Zhongguo Qiche Jishu Yanjiu Zhongxin, Zhongguo Qiche Gongye Xiehui (ed.), *Zhongguo Qiche Gongye Nianjian 2002-2007*: 2002 Page 381; 2003, Page 415; 2004, Page 407; 2005, Page 480; 2006, Page 506; 2007, Page 477. Guojia Xinxi Zhongxin (National Information Center) and Guojia Fazhan He Gaige Weiyuan Hui Gongye Si (National Reform and Development Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2007 中国汽车市场展望 (China Automotive Market Outlook 2007)* (Beijing: Jijie Gongye Chubanshe, 2007). Page 90.

Geely did not have to be concerned with accounts receivables and potential debts, which had been a rampant problem in the Chinese automobile industry.¹¹⁹

4.2.3. Use of the media

Li's entrepreneurship came from having been a salesman. Knowing that Geely was the first privately-owned automobile maker in China, he had to take advantage of this opportunity to show that everything he did would be different from the SOEs. He wanted to show the consumer public that the car Geely built would not only be the car that the Chinese people could afford, but would also be the cheapest among all other Chinese car makers. As Geely promoted its cheapest model 'Haoqin' at around RMB 45,000 to 50,000 in May 2001, Tianjin Xiali decided to fight the war head on, slashing the price of its 'Xiali' model '2000' to RMB 31,800. Li was determined to maintain Geely's reputation for selling the cheapest car in China, so he further reduced 'Haoqin' to RMB 29,900 (or approximately US \$3,650). This was the record lowest price ever offered in the Chinese car industry's history for a basic model. This price caused Geely great difficulties, as it was below the cost of production. Even with the revised engine in the later model 'Haoqin', the minimum selling price for this model remained very low at RMB 31,800 (or in US \$3,878).¹²⁰ Li's idea is similar to the plan used in American automobile production by Henry Ford in the 1920s and 30s, namely selling an affordable car and building the cheapest car in the country as the quickest and most direct way to national recognition.

¹¹⁹ Interview # 1, Geely

¹²⁰ Zheng, *Qiche Fengzi Li Shufu*, 汽车疯子李书福 (*Automobile Craze Li Shufu*). Page 143.

Thanks to Geely's earlier motorcycle distributor network, 'Haoqin' started to sell through the neighbouring provinces and then nationwide. In 2000 Li built a second automobile plant for Geely's model 'Merrie', which again used a four-cylinder small engine that came from the JV Shenyang Automobile Manufacturing Enterprise (SAME). On 6 January 2001, approximately 1,300 interested dealers and distributors of Geely automobiles, including 30 media agencies from the central and provincial government, were invited to stay in all the four star hotels in Guangzhou for the introduction of the new model 'Merrie'.¹²¹ As at that point he still lacked the official manufacturing permit, for this event Li was careful to choose the words 'passenger car' instead of 'passenger sedan' to avoid possible government intervention.

Only after Geely obtained the permit for manufacturing its passenger sedan in 2001 did Li start to take advantage of the news media. First of all, Li spent 16 million RMB to purchase a professional football team in Guangzhou and renamed it 'Geely'. The purchase of this team was a popular decision, modelled on similar corporate ownership of professional teams in Europe, and attracted national exposure as a means to promote Geely cars. However, unfortunately for Li his intention to use professional football almost backfired when his team was involved in a scandalous fixed game and he was forced to sell the football team.¹²²

This incident did not dampen Li's enthusiasm for using the media to incite interest in his automobile business however. On 1 October 2002, a national holiday in China, Li had

¹²¹ *Ibid.*, Page 134.

¹²² *Ibid.*, Pages 150-161.

the motorcycle stuntman Ko Shouliang imitate the American Evel Knievel's jump over the Snake River Canyon at Twin Falls, Idaho, by jumping Geely's four-door sedan 'Merrie' over a 120-yard canyon in front of the Potala Palace at Lhasa, Tibet. The jump was not successful as Ko Shouliang, in Geely's 'Haoqin' model fell off half way and luckily survived, but the event was one of China's most watched spectacular TV programs in 2002.¹²³ In a similar publicity stunt in July 2007, he arranged, through Qinghua University in Beijing, a collision test between a Mercedes Benz S Class model and Geely's model Merrie. The test result was not acknowledged by any reputable testing centre, but was used by Geely in its marketing campaign to great effect.

4.2.4. Lawsuit from Toyota

One of Li's showdowns came in December 2002 when Toyota of China decided to sue Geely for imitating the Toyota logo in Geely's Merrie model, and for misuse of the Toyota' brand name in Geely's commercials. Li was upset with this because he claimed that Geely's model 'Merrie', together with its logo, had been on the market for almost four years. He argued that Geely had bought the 8A engine from Toyota's subsidiary Daihatsu in Tianjin under a sales contract. Both Toyota's model 'Vios' and First Auto Works' 'Tianjin Xiali' were using the same engine and selling to the Chinese market. Toyota found it difficult to argue that Geely was infringing their rights if the engine was sold to Geely under the contract. However, Toyota argued that some of the later 'Merrie' models did not use the Daihatsu's A8 engine and that, regardless, Daihatsu although a subsidiary of Toyota, was not the same as Toyota itself. It was true that some of the later

¹²³ *Ibid.*, Pages 172-174.

productions of ‘Merrie’ had adopted different engines developed by Geely itself, so claiming that ‘Merrie’s engine was Toyota made was damaging to Toyota’s reputation of quality. Li was under pressure so he sought patriotic support through the media. The case caught the public mood making them concerned that foreign firms were controlling the Chinese automobile industry. In November 2003, the People’s Court in Beijing denied Toyota’s exclusive claim to Geely’s engine technology and gave the judgment to Geely.¹²⁴

4.2.5. Building of the automobile training academy and the upgrades in management

The court victory made Li look at his automobile business more seriously. In 2001, he closed down most of his motorcycle businesses with the exception of one model and concentrated the company’s energy on his Geely Automobiles. However, Li had new problems concerning human resources. To recruit professional managers for Geely, he first withdrew his family members from the management team. Then he moved Geely’s headquarters from Taizhou to Ningbo and made offers to managers from various automobile companies and higher government agencies, such as Bo Yang from Huachen (JV with BMW), whom Li appointed as CEO of Geely and Xu Gang, the controller of the Land Management and Tax Bureau of Zhejiang Province (Zhejiang Di Shui Ju) who Li signed up as the CFO.¹²⁵ Li relinquished his CEO position to Bo Yang and assumed the

¹²⁴ Jia Ke, *Zhongguo Qiche Diaocha, 中国汽车调查*, (Investigation of Chinese Automobiles). Page 290.

¹²⁵ *Ibid.*, page 289.

Chairmanship of Geely's Board. Bo Yang's previous experience included the reorganisation of Huachen Jinbei, another indigenous Chinese automobile company in Harbin in Heilongjiang Province. However, she did not work for Geely long and left for Jiang Nan Automobile within a year. Li then hired Nan Yang, the General Manager of Shanghai VW, and put him in charge of manufacturing and model development. In 2004, Li hired Shen Feng Ye, the former CEO of Daewoo in China, to work in the model development department as Deputy General Manager. However, in 2004 both Xu Gang and Nan Yang resigned from Geely for unknown reasons and went to Shanghai to join another smaller automobile company, Shanghai Maple, which was run by Li's disaffected brother, Li Shutong.¹²⁶

Li must have realised that the high turnover of personnel in top management indicated a problem for a fast-growing company like Geely. At the beginning of 1993, when Li was still in the construction materials business he went to Beijing and recruited 86 graduates from Beijing University and the People's University, but none of them stayed long. Frustrated with personnel resources and increasing demand for more manpower resulting from Geely's growth, Li went to Beijing and looked for a site to build an academy solely for Geely's automobile business. The permit was soon granted without a problem because the Chinese government at the time was encouraging establishment of institutions by private parties to supplement inadequate colleges. In November 1999, a site of 1600 mu (acres) was chosen at Machiko Township, Changping District in Beijing. Li appointed Luo Xiao Ming, then the vice chairman of Geely, as the principal of this

¹²⁶ Zheng, *Qiche Fengzi Li Shufu*, 汽车疯子李书福 (*Automobile Craze Li Shufu*). Page 215. Shanghai Maple was merged into Geely one year later.

newly-founded Geely University. The opening ceremony was held in 2000 and within five months the basic campus was completed. In September 2000, the first 3000 students were admitted to study in various subjects, which were mostly automotive engineering-related. By 2006, the yearly enrolment of students had reached 24,000 and the courses had been extended from to now include marketing, management, international trade and even genetics. Li's efforts in building this education institute earned him a good reputation, which offset his negative image regarding the football scandal and it laid a foundation of human resources for his workforce. Under the Geely group, there is one university and three academic and vocational institutes from which thousands of automotive mechanics and skilled workers have graduated.¹²⁷ Within a very few years Geely University was ranked eighth among the top 100 privately-owned universities in the country.¹²⁸

Geely's second factory was established in 2000 in Ningbo, Zhejiang Province, with the capacity to make 13,000 units of the 'Merrie' model annually. Li recruited Jiang Shubing, the former General Manager of Korean Daewoo and the Deputy Chief Director of technology at FAW in 2002, as the General Manager and boosted the capacity of the

¹²⁷ Between 1998 and 2005, Geely set up four academic institutes: Beijing Jili Daxue, (Beijing Geely University), Zhejiang Qiche Gongye Xuexiao (Zhejiang Polytechnic), Zhejiang Jili Jishi Xueyuan (Zhejiang Geely Technical Institute) and Hainan Sanye Xueyuan (Hainan Sanye College) ANON. Sinlang Qiche, 2006, 'Jiema Jili Jituan 'Keji Zizhu Chuangxin Xing' Fazhan Moshi, 解码吉利集团 “科技自主创新” 发展模式 (Decoding the Development Pattern of the Geely Group)

', <<http://auto.sina.com.cn/news/2006-02-21/1617168886.shtml>>, accessed 22 May 2009

¹²⁸ ANON., 2008, Xinhua Wang 'Zhongguo Minban Gaoxiao Paihang Diba: Beijing Jili Daxue, 中国民办高校排行第八: 北京吉利大学 (Beijing Geely University Ranks 8th in the Survey on Private University)', <http://www.nmg.xinhuanet.com/zt/2008-05/08/content_13204609.htm>, accessed 23 May 2009

Ningbo factory up to 38,000 units in 2003 and 73,000 units in 2004.¹²⁹ The most influential adjustment came in September 2002 when Li recruited Pan Yanlong, the former Chief Engineer of the Nanjing-Fiat JV, to be in charge of Geely's Engineering Department. Under the supervision and guidance of Pan, some of the most fundamental work at Geely was completed. First, product development needed to be systemised in order to upgrade the quality of Geely's products. To achieve this, Geely's R&D department constructed approximately 5,000 digital/mathematical models in 2003. Upon completion of this task, Geely was able to upgrade and change nine different models within two years.¹³⁰ Because of the mathematical models, the design of the new automobile models' body work could be simplified using three-dimensional digital data. For the older models, the platform design could be further improved to save cost. Secondly, Geely, under Pan Yanlong, built up the management system of technology, and in December 2003 Geely completed their product catalogue classification, the product standardising system and the engineering process standardising system. Lastly, Geely built up the self-ratification system for the design and development of their products. Despite these rapid advances, Li felt that Geely was still a small automobile company, although it had grown to own its own brand and basic development capacity. This meant a wider range was necessary. After the 'Haoqin' and 'Merrie' models became popular, in 2002 Geely launched another model called 'Youlio' (you-li-o), which phonetically means 'better (You) than Tianjin's Xiali (li) and Shanghai-GM's 'Sail'' (as 'o' in 'sai-o' in

¹²⁹ Lu, Feng, *Fazhan Woguo Zizhu Zhishi Chanquan Qiche Gongye de Zhengce Xuanze*, 发展我国自主知识产权汽车工业的政策选择, (Policy Implications of the Self-development of Intellectual Property Rights in the Automobile Industry). Page 73.

¹³⁰ *Ibid.*, Page 75.

Chinese), a fancy marketing name to attract clients. In January 2003 Geely put out the model 'Beauty Leopard', a 1.5 litres four-cylinder model, and marketed it as the first Chinese sports car. The general response was lukewarm, the consensus being that the model had just the same sedan engine with a sport body of sheet metal, but Li did not stop Geely's expansion and continued to introduce more models. In 2003, Geely engaged in a joint project with Daewoo International and invited 14 Korean automotive engineers to the factory to improve the working procedures in model design. Li insisted that the work team should be in 1:2 ratios, i.e. one Korean engineer to two of Geely's own Chinese engineers, ensuring that the Chinese were not missing any chances to learn the necessary knowledge in this project.¹³¹ Moreover, between 2005 and 2008, Geely also worked with German, Italian, and Taiwanese engineers to design various body styles.

4.2.6. Capital accumulation and the influx of public funds

With the low selling price of its models and the high expenditure in management training, model development and technology transfer from foreign suppliers, capital shortage was threatening Geely's growth. Li started opportunities to draw capital from public sources. The first company was Quan Chai of Anhui Province, which specialised in making diesel engines. In Li's plan, if Geely merged with the diesel engine company, the stock would easily rise because of the further link in the automotive business supply chain. However, Quan Chai was an SOE with funds from the local government, which supported another

¹³¹ *Ibid.*, Page 78.

automobile maker, Chery, a direct competitor of Geely's. The deal was being negotiated but was then called off, for Quan Chai chose not to help Geely compete with Chery. This local protectionism once again frustrated Li who was not a financial expert. This history repeated itself again in 2004 when Geely wasted time trying to merge with another publicly listed company, Xibei Chemical, and once again failed.¹³²

After these two bitter lessons, Li decided to look for a source of capital from Hong Kong. In March 2003, Geely signed with the Guo Run Holding Company in Hong Kong to register a new publicly-traded company. The Guo Run Holding Company was originally owned and held by He Xuechu who had been a financing expert in the Hong Kong stock market. With a few partners, he formed a company called Proper Glory Holding Limited (PGHL) under the Guo Run Holding Company. Through this new company's purchasing stock, he took control over a publishing company called Nan Hua Zixun (Nanhua Media). The Guo Run Holding Company had been a finance company without any automobile manufacturing background, but it did have Nan Hua Zixun, which could now go public with Geely's participation. At the same time Geely did not have to worry about losing control in management and manufacturing. The mutual investment would give them a new opportunity to go public together, with the combination of an industrial company and a finance outfit benefiting both parties.

In 2003, Guo Run issued 100 million shares to the public and raised HK\$55 million (approximately US\$7.8 million) that they invested in Geely, forming Geely Guo Run Qiche (Automobile) Company Limited. As a result of this JV in April 2003, Geely owned

¹³² Zheng, *Qiche Fengzi Li Shufu*, 汽车疯子李书福 (*Automobile Craze Li Shufu*). Pages 200-201.

53.2 percent and Guo Run 46.8 percent of the shares. Geely Guo Run Qiche went public smoothly. After Geely obtained its finance influx from the market, Li used another outfit, Zhihui Group, which was under his name, and twice re-invested in PGHL. By doing this Li owned 32 percent of PGHL, the same share as He Xuechu. According to the rules of the Hong Kong stock market, in order to control a company one must own more than 30 percent of the shares, whereas anything under the 30 percent ceiling is considered as normal transactions between two private parties. This meant that, if Li directly or indirectly owned 30 percent of Geely Automobile, he was obliged to purchase the stock sold at the same price as he purchased PGHL and this was the reason why Li re-invested in PGHL, helping him avoid purchasing the stock at market prices.

The true selling price of PGHL remained a secret. Through these two transactions, He Xuechu achieved his mission of financing and helping Geely to become a public listed company. When Li later bought back the shares from Guo Run and re-invested in the third factory, Huapu Automobile, which he bought back from his brother Li Shutong, he was in total control of Geely Guo Run, which was soon renamed to Geely Automobile Holding Company Limited. He Xuechu resigned his chairmanship, which was taken over by Li. Geely began to have control rights for the automobile manufacturing business and also had links to the channel for public financing.¹³³ In 2004, Geely obtained a loan of one billion RMB spread over seven years from the local government at zero percent interest. Li's financial move in the Hong Kong stock market had smoothed out the road for Geely to be the first privately-owned Chinese automobile manufacturing business. In

¹³³ *Ibid.*, Page 206.

2005, the total assets of Geely Automobile reached 8 billion RMB; minus the liability, the net assets were approximately 1.7 billion RMB, and the debt ratio was 79 percent. Finally, Geely was able to meet the minimum required capital, one and a half billion RMB, set by the central government as the entry level of the automobile manufacturing business.

4.2.7. The Chinese dream and the impact of government policies

The temporary resolution of the capital shortage problem was a great success for Geely, but Li's dream was even greater. He bought more land in Luqiao, Taizhou, in Zhejiang Province, for his fourth factory. Due to the increasing cost of land, he also purchased land in Xiangtan, in Hunan Province and in Lanzhou, in Gansu Province, both of which are interior provinces. Without a detailed study, Li thought that a 200,000 unit yearly production was a fair economy of scale for a factory but 2 million units per year was a suitable economy of scale for an automobile company.¹³⁴

Each of Geely's expansions begs the question: where did the capital come from? Publicly-traded Geely could have raised certain amounts of capital from the financial market, but the price of Geely's stock had to rely on Geely's profitability in running its automobile business, which was constantly questioned because of Geely's setting the lowest prices in the market. To maintain Geely's unique position, Li had set up three operating principles for Geely. First, Geely would never use its brand, as the SOE

¹³⁴ *Ibid.*, Page 250.

companies did, to form a JV with a foreign company. Second, Geely would never use its entire assets to start a JV with another entity. Third, Geely would never give up its own development of products.¹³⁵ Although Geely had imitated technology from Toyota and incorporated some Korean technology into its own R&D of models, it never lost operating authority to a foreign company. Though Geely used capital from the Hong Kong stock market, which drew funding from international monetary sources, it never lost financial control of the company. Unlike the Big Three and Small Three state enterprises that formed various JVs with foreign companies, Geely had since the beginning remained independent from foreign investors. Without the financial support of the government, Geely had maintained a privately-run company among Chinese automakers.

Geely's automobile sales exceeded 200,000 units in 2006 making it eighth among manufacturers in China. By April 2006, Geely had produced its 500,000th car. Compared to other major car producers, Geely was a relatively small company, but it had its own transmission and engine factories with its own patents and designs of models. In 2004, twenty years after the first import of cars in quantity, China started to export to the Middle East, Africa, Eastern Europe, Latin America, Malaysia and Russia. Geely and Chery were the two major exporters that attracted attention from overseas automakers

¹³⁵ Lu, Feng, *Fazhan Woguo Zizhu Zhishi Chanquan Qiche Gongye de Zhengce Xuanze*, 发展我国自主知识产权汽车工业的政策选择, (Policy Implications of the Self-development of Intellectual Property Rights in the Automobile Industry). Page 82.

and international media. Geely has stated that it intends to produce 2 million cars a year by 2015 and of those three quarters would be for export.¹³⁶

In Li's biography, written by Zheng Zhushi (China CITI Press, 2007), Li is depicted as a 'mad man'. Zheng argues that Li is irrationally 'crazy', doing many things that were considered 'unusual' or 'incredible'. These included Li's purchase of a professional football team, the stunt jump at the Potala Palace in Tibet; the collision test between a Geely and a Mercedes, the sales strategy of selling the lowest-priced car in China and Geely's arguments with Toyota over copyright infringements. But the truth is that everything Li did was to strive for the final goal of a successful automobile business. Li's schemes are thus consistent with his use of media, his astounding statements, his marketing methods, and his plan of listing Geely on the Hong Kong stock market to open the channels for financing. When seen from a business perspective, it is inappropriate to call Li a mad man for the things he has done.

During Li's eleven year effort and dedication in developing the automobile business, the government had not been supportive of privately-owned automobile businesses. Moreover, the Chinese government 1994 AIP policies had protected the major three SOEs and there were several barriers placed in the way of Geely and companies like it, including:

(1) The car loan policy not being related to encourage the sales of passenger cars by individual ownership.

¹³⁶ Interview # 1, Geely

(2) The revised minimum required capital to acquire an automobile manufacturing permit being raised to 2 billion RMB, a high threshold for private enterprises.

(3) Local governments' ongoing preference for the JVs' car models over models from private companies like Geely, to be used by the taxi companies which served in municipal districts across the country.

(4) The relatively high cost of land in the coastal provinces precluding easy expansion for private companies like Geely, forcing Li to look for cheaper land in interior provinces for expansion. Though the local governments in the interior provinces welcomed the economic boost that new businesses could bring, the distance between Geely's factories on the coast and in the interior provinces raised logistical costs in a way the Chinese Six did not need to deal with.

These are all contributing factors as to why it is true to say that Geely's success in developing into the first privately-owned automobile company in a short 11 year period had been a miracle, considering all the difficulties in obtaining licenses and finances, in acquiring technology and fighting for market share. Li had survived China's inhospitable political economy and Geely became the first privately-run automaker. Relying on its low price tag, Geely started a battle with the JVs, which earned it the nickname of 'Catfish' for causing big waves from time to time.¹³⁷ Beginning with micro-sized models like the 'Haoqin', Geely moved on to compact models, sports cars, and SUVs. Starting from Taizhou in Zhejiang Province, Li built two factories in Ningbo and Shanghai, and a

¹³⁷ Yuan, Lixin, 2001, Renmin Wang 'Jili Qiche de Nianyu Xiaoying, 吉利汽车的 '鲶鱼效应' (The Catfish Impact From Geely)', <<http://past.people.com.cn/GB/paper53/3307/426969.html>>, accessed 15 April 2008.

corporate office in Hangzhou. Progressing from originally copying models from Toyota, Daihatsu and Daewoo, to developing its own sedans, the King Kong and Vision, Geely now used its own digital data banks and three-dimensional digital design tools. Accordingly Li was named, alongside Yin Tongyao of Chery who will be discussed later, as one of the two most nationally influential figures in the Chinese auto industry.

Before 1997, the Chinese government paid virtually no attention to privately-owned automobile makers; they concentrated solely on the Big Three and Small Three. In the areas of manufacturing permits, corporate taxes, financial aid, and government subsidised purchases, a private company such as Geely received practically no support from either the central or the provincial governments. For the Big Three and Small Three that ventured into business with the foreign companies the corporation tax rate was 17 percent, versus 33 percent for the privately owned automobile makers.¹³⁸ The Big Three and Small Three received collective and designated purchase orders from the government for automobiles to be used for government officials, to the envy of privately-owned companies. These unfavourable policies were only modified in 2005 in China's eleventh Five-year State Economic Plan, which was approved by the sixteenth State Central Committee.¹³⁹

¹³⁸ Ministry of Finance, (1991) 'Zhonghua Renmin Gongheguo Waishang Touzi Qiye he Waiguo Qiye Suodeshui Fa, 中华人民共和国外商投资企业和外国企业所得税法 (Foreign Investment Company and Foreign Company Corporate Tax Tariff)' Ministry of Finance
<http://www.cycnet.com/cms/2006/kjs/xgfg/200609/t20060904_377043.htm> 20 May 2009

¹³⁹ This clause was amended on 1 January 2008. The tax rate for both foreign and domestic corporations was set to 25% with the exception of those companies that are public listed and taxed at 15%. National People's Congress, (2007) 'Zhonghua Renmin Gongheguo Qiye Suodeshui Fa, 中华人民共和国企业所得税法 (Law of Company Corporation Tax)' National People's Congress
<http://www.gov.cn/ziliao/flfg/2007-03/19/content_554243.htm> 20 May 2009

Table 4. 3. Comparison of Chinese vehicle consumption tax rate on engine of various displacements before and after 31 March 2006¹⁴⁰

1 January 1994-31 March 2006		1 April 2006-31 August 2008		1 September 2008 onwards	
Engine Displacement	Tax rate	Engine Displacement	Tax rate	Engine Displacement	Tax rate
D<1.0L	3%	D<1.0L	3%	D≤1.0L	1%
1.0L≤D<2.2L	5%	1.0L≤D<2.2L	5%	1.0L<D≤1.5L	3%
D≥2.2L	8%	2.2L≤D<3.0L	9%	1.5L<D≤2.0L.	5%
		3.0L≤D<4.0L	14%	2.0L<D≤2.5L.	9%
		D≥4.0L	20%	2.5L<D≤3.0L.	12%
				3.0L<D≤4.0L.	25%
				D>4.0L	40%

The regulatory environment did become more generally favourable to Geely. In 2006, the Chinese government issued a revised vehicle consumption tax table to apply to passenger cars according to the size of the vehicle's engine displacement. As shown in Table 4.3, the government intended to offer a favourable tax rate for a car with a smaller engine displacement of less than 1.5 litres and penalise those cars with an engine displacement more than 2.0 litres. For cars with engines greater than 4.0 litres the tax rate went as high as 20 percent after March 2006, and rose to 40 percent in September

¹⁴⁰ Zhongguo Shuiwu Wang Zuanti Baodao, *Jingji Cankao Bao*, 29 August 2008, ANON., 2008, Zhongguo Shuiwu Wang 'Qiche Xiaofeishui Shulv Tiaozheng, 汽车消费税税率调整 (Amendment on Vehicle Consumption Tax)', <<http://www.ctax.org.cn/news/rdzt/qcxfstz/>>, accessed 5 May 2009 ANON. National Reform and Development Commission State Council, 2006, 'Xin Qiche Xiaofei Shui Shishi, 新汽车消费税实施 (New Automobile Consumption Tax Implemented)', <<http://auto.people.com.cn/GB/25959/60863/>>, accessed 5 May 2009 Anon., 2006, Renmin Wang 'Qiche Xiaofei Shui, 汽车消费税 (Automobile Consumption Tax)', <<http://auto.people.com.cn/GB/25959/60863/60866/4262066.html>>, accessed 5 May 2009.

2008. On the surface, Chery and Geely should have benefited from the reduction of the tax, but sales of their micro and sub-compact car sales did not increase more than 10 percent in 2006, as opposed to a steady 20 percent in the period of 1997 to 2005.¹⁴¹

The sales tax cuts for manufacturers of smaller cars were considered to be in conjunction with the progressive reduction of tariffs on imported automobiles after China's admission into the WTO, and helped the privately owned businesses to improve their profit margins. The main aim of the tax cuts, according to an executive of Geely, was to ensure that the SOE's automakers could compete with those imported models.¹⁴² As for the collective purchase of automobiles for governmental use, local officials merely paid them lip-service. Governmental agencies across the country could hardly distinguish the difference between the vehicles of the SOE's JVs and that of Chinese indigenous companies.¹⁴³ The central government approved to promote the business of Chinese indigenous companies' automobile factories, but it was ineffective in its mandate for local governments purchase cars from private and indigenous factories. There was no clear mandate to use indigenous automakers' products over those of JVs.

Determined to develop its own engine, Geely had spent three years in research and produced the engine model JL4G18 which had an aluminium engine block and cover with a 1.8 litre displacement, and then claimed to have a new Continuing Variable Valve Timing engine technology. The performance was rather moderate with 103 horse power,

¹⁴¹ Guojia Xinxi Zhongxin (National Information Center) and Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2008* 中国汽车市场展望 (*China Automotive Market Outlook 2008*). Page 166.

¹⁴² Interview # 1, Geely

¹⁴³ *Ibid.*

and 57.2 torque powers. Unfortunately, its carbon emissions barely reached the E-III standard, which meant that it did not qualify for use in large cities which followed the E-III or even E-IV benchmark, like Shanghai or Beijing.

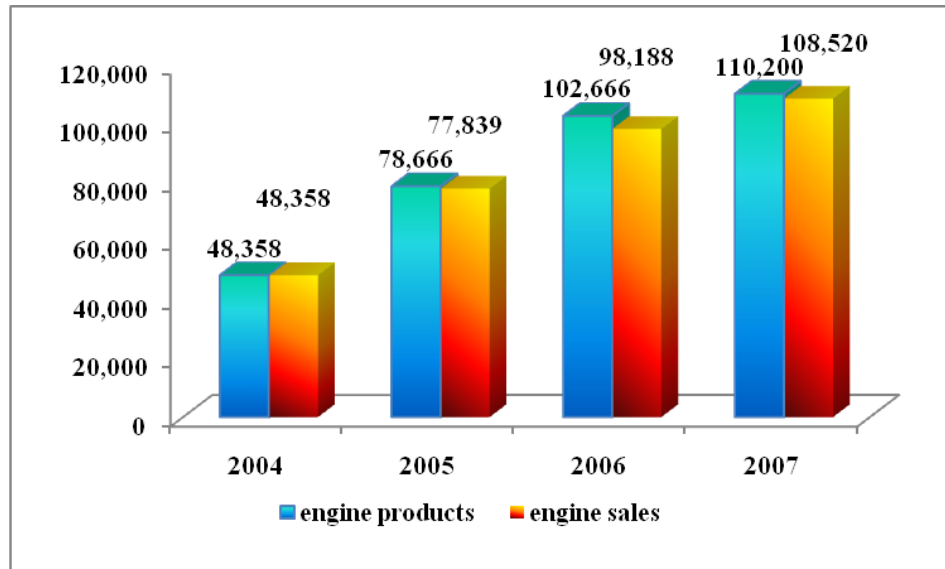


Figure 4. 6. Geely's engine production and sales, 2004-2007¹⁴⁴

¹⁴⁴ The author of this thesis has combined and edited the source of for Geely's integrated engine production and sales numbers from Zhongguo Qiche Gongye Xiehui Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2005*, *中国汽车工业年鉴 2005 (China Automotive Industry Yearbook 2005)* (Tianjin: Zhongguo Qiche Gongye Nianjian Qikan She, 2005). Page 491; Zhongguo Qiche Gongye Xiehui Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2006*, *中国汽车工业年鉴 2006 (China Automotive Industry Yearbook 2006)* (Tianjin: Zhongguo Qiche Gongye Nianjian Qikan She, 2006). Page 517; Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2007*, *中国汽车工业年鉴 2007 (China Automotive Industry Yearbook 2007)*. Page 461.

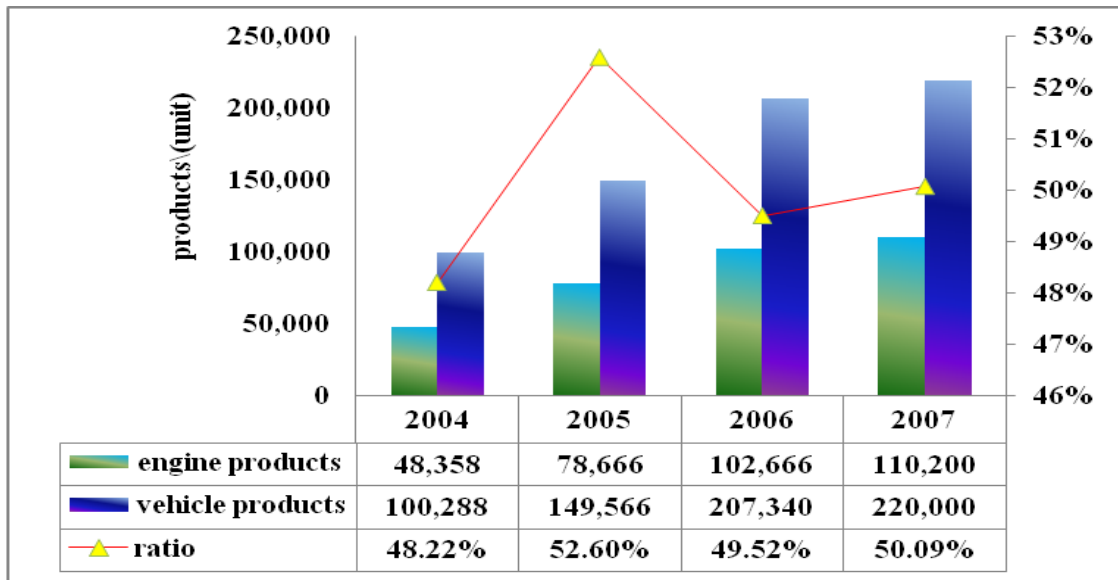


Figure 4. 7. Geely's engine and vehicle production, 2004-2007¹⁴⁵

As shown in Figures 4.6 above, Geely's engine production during the period 2004-2007 was between 48,358 and 110,200 units. Its demand for its vehicle production was between 100,288 and 220,000 units, as can be seen in Figure 4.7. The shortfall in its engine production to meet the need of its vehicle production was almost a half. When Geely started to build its first model in the late 1990s, it relied on the outsourcing of an engine from SAME, a northern Chinese JV with the Japanese engine maker Mitsubishi Motor Corporation. Between 2004 and 2007, Geely's self-developed engines only fulfilled between 48.22 percent and 52.60 percent of its own production needs, and the

¹⁴⁵ *Ibid.*, 2005-2007' 2005, Page 491, 2006, Page 517, 2007, Page 461. The source of the engine production of Geely 2005 Page 480, 2006, Page 506, 2007, Page 450, The source of total production of Geely; and 'Zhongguo Qiche Gongye Niandu Baogao 2008' (Annual Report on the Automotive Industry in China, 2008) the production of Geely in 2007, Page 291.

balance depended on the outsourcing of SAME, whose supplying details will be discussed in Section 7.3 of Chapter 7.

4.3 Chery Auto

'...The joint venture investment ratio is 50:50, but we do not even have the pride of our partner's dog. As we worked with a German company (VW), they paid for the airfare of their pet dog and went through all kinds of procedures to have the dog accompany them to China. They spent more money on their dog than we did to send our employees to Germany for training. We should be proud of what we are doing [in manufacturing our automobile], and we should applaud those who have created an indigenous Chinese brand, whether it is our competitor Geely or whoever, as long as they are Chinese.

... From a qualitative perspective, the joint ventures' models are better than the indigenous brands' models. But in the broader view, the indigenous brand is better for the country and we had better do it on our own...it is truly sad if one nation does not have its own brand and own automobile industry. China is a great country and we should have the courage and determination to do this.' —Yin Tong Yao, CEO and President of Chery Automobile¹⁴⁶

¹⁴⁶ Liu, Tao, 2005, Zhongjin Zaixian 'Yin Tongyao Yingkao Qirui, 尹同耀应考奇瑞 (Yin Tongyao Brings Challenge upon Chery)', <<http://news.cnfol.com/050926/101,1597,1463530,00.shtml>>, accessed 23 May 2009.

As the one millionth vehicle ran off the production line at Chery Automobile in 2006, the news spread across all of China. It was the first Chinese company that was not a JV to reach such a milestone. Chery is totally owned by a Chinese state firm that has never entered into any JV with a foreign company and it controls its own technology in engine and transmission design. It broke the myth that China could not build cars independently without relying on a blue-print provided by foreign automakers. Chery has its own R&D, which produced its own models and provided for its own and sales and service networks. Since 2001 Chery has exported to Russia, Asia, the Middle East and to various African countries. More recently in 2006, Chery entered into an agreement with Chrysler to develop a model to enter the highly competitive USA market, and has begun to work on its global business strategy.

Chery or 'Qi Rui' (meaning 'good luck' or 'uniquely promising'), was the first regional auto maker in Anhui Province. It has had the support of the Beijing government from its inception to the present day. Chery uniquely fills the void by providing domestic automobiles in the Chinese market, something that the Chinese government and people have sought since the 1950s. It has been hailed as the top tax-paying company in Wuhu, Anhui Province, after the Wuhu tobacco industry, and in 2006 Chery was selected by Fortune Magazine as the eleventh 'most praised' company in China.¹⁴⁷ In an interview with media in 2003, Chery's top executive Sun Yong claimed that although Chery's

¹⁴⁷ Wuhu Ribao, 2007, 'Wuhu Juanyan Chang, Qirui Ruxuan 2006 zhongguo Nashui Wubaiqiang, 芜湖卷烟厂, 奇瑞入选 2006 中国纳税五百强 (Wuhu Tobacco Company and Chery Listed Top 500 Corporate Tax Payer)', <<http://ah.anhuinews.com/system/2007/09/11/001845032.shtml>>, accessed 2 August 2008.

factory scale is relatively smaller compared to automobile giants such as Toyota, Chery nevertheless determines to be 'China's Toyota'.¹⁴⁸

With Geely, Chery Automobile is the second established Chinese auto manufacturer to be independent of foreign companies' technological influences and is one of the fastest growing car makers in China. It began as a local governmental enterprise in Wuhu, in the period between 1992 and 1993. Anhui Province's nominal gross domestic product for 2006 was approximately US \$79 billion, or US \$1,300 per capita, approximately 60 percent of the nation's average. Its mid-size economy was not as competitive as that of its richer neighbouring provinces on the coast, such as Jiangsu and Zhejiang.

In Wuhu, some small factories were successful by winning contracts for building handcrafted automobile body panels. This attracted the attention of both the Wuhu City government and the Anhui provincial government. When a visiting group of Wuhu government officials travelling to the United Kingdom to explore business opportunities in January 1995 learned that British Ford intended to sell one of its obsolete engine factories, they immediately purchased the factory for US \$25 million. In 1997, five government agencies under the Anhui provincial government formed a component company with registered capital of 1.75 billion RMB, a figure just over the governmental minimum requirement for a car manufacturing company. Because the central government in Beijing did not approve Anhui province for automobile manufacturing, the Wuhu city government could only use the factory to make engine components. However, this project was given extra attention and was designated as '951' within the city

¹⁴⁸ ANON. Beijing Qingnianbao Shidai, 2003, 'Zuo Zhongguo de Fengtian, 做中国的丰田,(Be China's Toyota)', <<http://auto.sina.com.cn/news/2003-08-20/43664.shtml>>, accessed 25 August 2008.

government to signify the ‘number one project in China’s ninth Five-year State Economic Plan. It was named Anhui Qiche Ling Bujian Gongye Gongshi (Anhui Automobile Spare Parts and Industrial Company or AASPIC), and the entire business remained rather secretive and closed to the public until 1999.

The Deputy Mayor of the Wuhu government, Zhan Xialai during a visit to FAW met an engineer named Yin Tongyao, also a resident of Anhui Province, who had been the chief engineer for FAW. Yin was famous for being selected as one of ten top engineers in the country and had worked in various automotive jobs at FAW for twelve years. Responding to the invitation by the Wuhu City government and through his connection with Anhui Province, Yin and seven other engineers joined AASPIC in 1995.

4.3.1. Connections with FAW, DMC and SAIC

Yin and the men from FAW did temporarily solve the human resource problem for the components manufacturing company, but the Anhui government’s goal was to build cars by developing the facilities to build their nucleus, the engine. So, in 1995, they spent US \$25 million purchasing Ford’s outdated engine factory in Britain and brought it into China for this purpose. In 1996, however, when the British engineers arrived in Wuhu with the equipment, the assembly of the transplanted factory did not progress as smoothly as had been hoped. Six months passed and the production line was still not completed. Yin cancelled the contract for assembling the old Ford factory and sent the British home, saving approximately US\$4 million, on the grounds that the job was not carried out as

scheduled. Subsequently Yin recruited experienced personnel from FAW to complete the unfinished job, which took about five months.

As soon as the engine assembly line was completed, Yin started to share his past experiences in manufacturing a car platform copied from FAW's 'Jetta' model. He also consulted with a Taiwanese company, Fujin, for the development of various mouldings and dyes for the body work. By March 1998, the four primary production lines, for the press, welding, painting, and general assembly, were made operational. In December 1999 the first copied model of the 'Jetta', named 'Feng Yun', ran off the production line. At this time, AASPIC still did not have a license to produce passenger cars. But with the protection and assistance of both the Anhui provincial and Wuhu City governments, the 'Feng Yun' was appointed the official taxi for Anhui province. This move absorbed the first 2000 units of the 'Feng Yun' and helped to gain AASPIC a temporary license to manufacture passenger cars.

While the cars made by AASPIC had met the standards required by the government, its production was not listed in the national catalogue and thus was considered an illegal industrial production. Through negotiations with the National Economic and Trade Committee in 2001, it was recommended that AASPIC join with SAIC to obtain a legal production permit, albeit under SAIC with a new name Chery. The condition was to concede 20 percent of Chery Automobile to SAIC, which amounted to 350.4 million RMB in return for the manufacturing permit. SAIC, as one of the Big Three in the Chinese automobile industry, did not pay too much attention to the growth of Chery, instead being worried about its own liabilities as a shareholder. To avoid further

complications, SAIC instituted a series of conditions which were meant to act as a buffer against the potential liability of working with another company. SAIC required that, if Chery was to produce cars under SAIC's manufacturing permit, no SAIC funding was to be available to Chery, SAIC would not participate in Chery's management and Chery should not be entitled to a share of SAIC's profit. Moreover, SAIC prohibited Chery from using its sales network or requesting that SAIC share its technology and experience.

As Chery grew faster in later periods, SAIC proposed to increase its share in Chery, which was rejected. Under the direction and coordination of the National Development and Reform Council and through intense rounds of negotiations between Chery and SAIC, SAIC finally decided to give up its 20 percent share in Chery. In June 2003, Chery registered its own models under the new manufacturing permit, fully severing its abnormal relations with SAIC. Conceding 20 percent of its shares in exchange for the production permit of SAIC might have seemed an unfair practice to Chery. But to put the SAIC-Chery logo on the models Chery produced benefited Chery's marketing image, especially as a newcomer in the automobile industry.

During the period 2001 to 2003 Chery grew rapidly after the introduction of three new models following the popular 'Feng Yun'. According to one senior engineer, the development of the new models was due to a major personnel influx from DMC, the major JV and state automobile company in Hubei Province.¹⁴⁹ In 2000, more than ten senior engineers left DMC to join Chery in the hope of increasing their job satisfaction. At DMC, most of the core technology used in building cars was not controlled by the

¹⁴⁹ Interview # 2, Chery Wuhu, Anhui, August 2007

company itself but by its foreign partners, Nissan, Honda, Peugeot-Citroën and GM's Kia. These experienced engineers had participated in the development of Peugeot's cars, but were not happy with DMC's indifference to domestic engineers. They walked out on DMC and arrived in Wuhu in July 2001, forming a firm called Jia Jing Company, in which Chery held the majority share, and becoming the chief development team behind Chery's three new 2003 models the 'QQ', 'Eastar' and 'Qi Yun'.¹⁵⁰

Chery's initial developments resulted from the hiring of Yin, the Chief Engineer and executive of FAW, the appropriation of a production license from SAIC, and the technological prowess of the technical staff from DMC. Furthermore it worked with the Taiwanese company, Fu Jing, for its sheet metal moulding and dies, and contracted the Italian companies, Bertone and Pininfarina, for its model A1 and A3 design. It also cooperated with the largest privately-owned power train system and combustion engine design company, AVL, in the development of a series of engines which later evolved into Chery's own engine design called ACTECO, which developed 18 different types of aluminium engine-blocks. In 2001, Chery sold 28,000 units of its 'Cowin' model, with gross sales surpassing 2 billion RMB, a figure that almost doubled in 2002 and increased twofold again in 2003. Of the three new models, in 2003, 'QQ' became one of the top ten best-selling cars in China within four months of the first car coming off the production line.

¹⁵⁰ Lu, Feng, *Fazhan Woguo Zizhu Zhishi Chanquan Qiche Gongye de Zhengce Xuanze*, 发展我国自主知识产权汽车工业的政策选择, (Policy Implications of the Self-development of Intellectual Property Rights in the Automobile Industry). Page 92.

In 2004, the Chinese government started macro-economic readjustment and control over the over-inflated real estate market and economy. The Severe Acute Respiratory Syndrome (SARS) virus epidemic seriously damaged the country's economy, including passenger car purchases and vehicle production. In the same year, Chery's 'Eastar' model was replaced by Beijing-Hyundai's 'Sonata' model as the official car of the tenth National People's Congress and National Committee of the Chinese People's Political Consultative Conference (CPPCC), which further reduced the demand for Chery automobiles. At the same time Chery was mandated to stop using SAIC's logo and became totally independent from SAIC marketing. All these events badly affected Chery's sales. As a result, Chery's revenues only increased by about 2 percent in 2004 over the previous year, as opposed to the Chinese automobile industry as a whole which enjoyed an average of 16 percent growth.

In order to regain its market share in 2005, Chery started to slash prices on its entire range of models, including the most popular model 'QQ' which was sold below RMB 30,000 (approximate US\$4000) after the price cut. The price cutting policy began to work for Chery and increased its sales. As indicated in Table 4.4 below, its passenger car sales ranked seventh in the country in 2005, climbing to fourth in 2006 and 2007. In 2007, Chery owned three assembly plants, two engine factories, one transmission factory, one R&D centre, and one training academy. By 2007, Chery possessed the capacity to produce 650,000 cars per year. However, its facilities could only produce approximately 400,000 engines and 300,000 transmission modules per year, requiring Chery to outsource the balance of needed engines and transmission in order to maximise its car production and sales.

Table 4. 4. Chery and Chinese automobile companies' sales ranking, 2005-2007¹⁵¹

Ranking	2005	sales units	2006	sales units	2007	sales units
1	Shanghai GM	298,600	Shanghai GM	365400	Shanghai GM	500,308
2	Shanghai VW	244,700	FAW VW	341200	FAW VW	455,654
3	FAW VW	238,300	Shanghai VW	340600	Shanghai VW	436,343
4	Beijing Hyundai	224,700	Chery	272400	Chery	381,219
5	Guangzhou Honda	203,200	Beijing Hyundai	261800	Guangzhou Honda	295,299
6	FAW TOYOTA	190,000	Guangzhou Honda	224300	FAW TOYOTA	281,183
7	Chery	184,000	FAW TOYOTA	210400	DMC NISSAN	271,915
8	DMC NISSAN	157,500	Geely	204300	Beijing Hyundai	231,131
9	Geely	149,900	CITROEN	201300	Changan Ford	218,465
10	CITROEN	140,400	DMC NISSAN	198900	Geely	217,687

¹⁵¹ For the 2005 figure: ANON. Jingji Ribao, 2006, '2005 Nian Zhongguo Shida Jiaocheng Changjia Shichang yi Chaoguo Qicheng, 2005 年中国十大轿车厂家市场份额已超过七成 (The Ten Top Chinese Passenger Car Automakers Capture 70% of Market Share, 2005)', <<http://www.ce.cn/xwzx/gnsz/gdxw/200601/16/t20060116_5848305.shtml>>, accessed 12 January 2007. For 2006 figure: ANON. Zhongguo Qiche Xiehui Xinxi Wang, 2007, 'Zhongqi Xiehui: 2006 Nian Jiaocheng Xiaoliang Qian Shiwei Qiye Paiming, 中汽协会: 2006 年轿车销量前十位企业排名 (Chinese Automobile Association: 2006 Sales Ranking of Top Ten Passenger Car Manufacturers 2006)', <<<http://www.auto-stats.org.cn/ReadArticle.asp?NewsID=4493>>>, accessed 12 January 2008. For the 2007 figure: ANON. Qiche Zhijia, 2008, '2007 Niandu qiche Xiaoliang Paihangbang, 2007 年度汽车销量排行榜 (2007 Automobile Sales Ranking)', <<http://club.autohome.com.cn/bbs/thread-c-519-885953-1.html>>, accessed 14 January 2008.

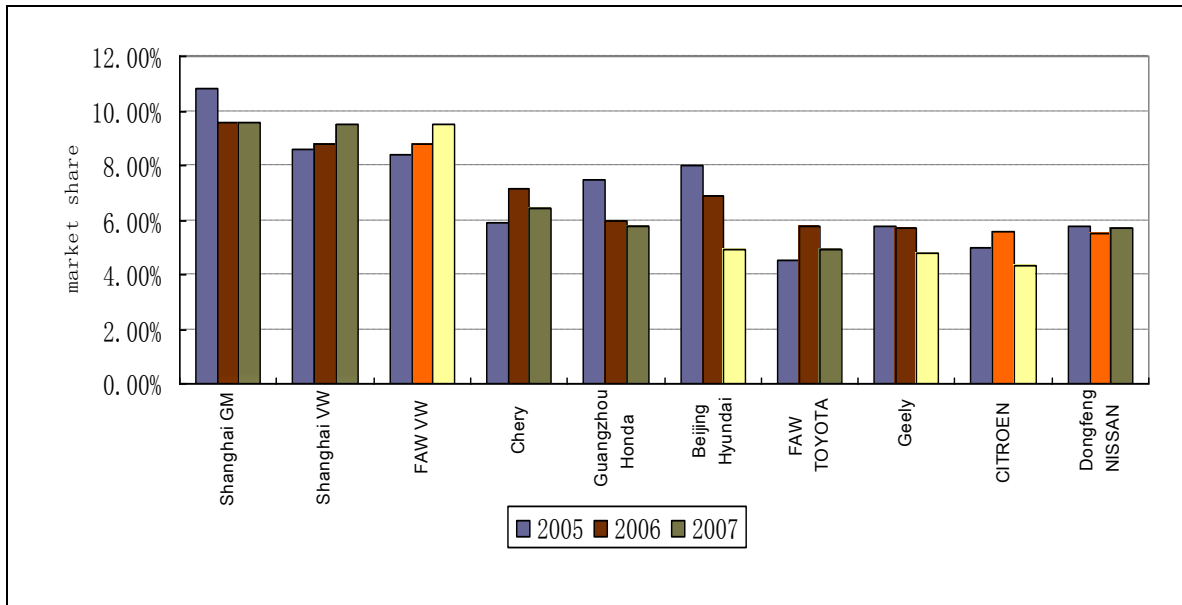


Figure 4. 8. Chinese automobile companies' (both JV and indigenous automakers) market shares, 2005-2007¹⁵²

However, from 2005 to 2007, Chery's market share in China did not increase together with the increase of its sales. This was due primarily to the increased output and sales in China's automobile sector as a whole; the JV companies in particular had increased their overall sales considerably. As illustrated above in Figure 4.8, Chery's market share during this period remained steady between 6 percent and 7 percent, and it ranked fourth in the country.¹⁵³

Chery expanded its production and sales grew very rapidly from 2001 to 2007, but its profit return rate was consistently below the average profit return rates of the JV

¹⁵² *Ibid.*

¹⁵³ *Ibid.*

companies.¹⁵⁴ Soon after its one millionth car came off the production line, Chery started to look into its global strategy and the possibility of export. In July 2007, it signed a global strategy memorandum with Chrysler with a plan to produce certain smaller models for Chrysler's US market. Chery also entered into a sales agreement with an American company Visionary Vehicles, which had sold fifty distribution zones in the United States at US\$2 million each to dealers, to market Chery's models.¹⁵⁵ By 2005, Chery had offered a complete line of products with 25 models including subcompacts, compacts, sedans, SUVs (sport utility vehicles), and MPVs (multi-purpose vehicles) of engine displacement ranging from 0.8 to 3.0 litres.

4.3.2. Chery's overseas performance and strategy

Thanks to its low pricing policy and extensive selection of basic models, Chery had a degree of success with the overseas business operations it launched between 2001 and 2007. Its rapid growth made Chery the leading automobile exporter in China for those six consecutive years, selling its products to 56 countries in Asia, Africa, the Middle East and South America, with twelve countries importing quantities of 10,000 units or more.¹⁵⁶ As illustrated in Table 4.5 below, Russia and Syria represented Chery's major export countries, with 16.58 and 9.85 percent respectively. The Chinese government has encouraged auto exports from companies like Chery and Geely by offering them

¹⁵⁴ Gao, Paul, 'Passenger Car OEMs in China: At a Crossroads between Capturing Massive Value or Facing Immense Value Destruction', *Automotive & Assembly* (MaKinsey & Company, 2006). Page 6.

¹⁵⁵ *Automotive News*, 18 Sep 2006 Page 4.

¹⁵⁶ Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2008*, 中国汽车工业年鉴 2008 (*China Automotive Industry Yearbook 2008*). Pages 297-314.

significant tax rebates. Figure 4.9 below shows the steady growth of Chery's export in the five year period 2002 to 2007, which coalesces with the overall trends in China's automobile exports. In February 2003, Chery signed a contract with Khodro of the SKT Group, the largest automaker in Iran, to build a CKD kits factory in Iran, including pressing, welding, coating, and general assembly facilities, to produce up to 30,000 units annually. This project was strengthened by the participation of Canadian Solitac, an investment group, to produce Chery's 'QQ6' in 2008.¹⁵⁷ Pursuing niche markets in developing countries, Chery duplicated the same strategy in Russia, the Ukraine, Egypt, Indonesia, and Uruguay and became the first company in China to export a complete CKD and assemblage factory. The first Chery car produced by SKT from Iran and assembled in Russia came off the production line in Kaliningrad, Russia in April 2006.¹⁵⁸

¹⁵⁷ ANON., 2007, 'Qirui Zai Yilang Hezi Jianchang Shengchang Xiaoshou QQ6, 奇瑞在伊朗合资建厂生产销售 QQ6 (Chery Enters JV in Iran to Produce and Sale QQ6)', <<http://www.wh.cn/dt2111145506.htm>>, accessed 15 August 2008. This JV is located in the northern Iran Mazadaran Province in Babol City. The total capital of \$370 million is to be distributed by Chery 30%, Iran Khodro 49% and Canadian Solitac 21%. The JV is to assemble Chery's CKD, 'QQ6', and to market Iran and neighbouring countries.

¹⁵⁸ ANON., 2008, 'Chery International', <<http://www.cheryglobal.com/>>, accessed 3 September 2008.

Table 4. 5. Chery's vehicle export percentage in China's total export for different countries, 2007¹⁵⁹

Ranks	Country	Export units	(%)
1	Russia	107,685	17.5
2	Syria	52,629	8.6
3	Ukraine	47,091	7.7
4	South Africa	39,752	6.5
5	Vietnam	35,846	5.8
6	Algeria	34,223	5.6
7	Iran	31,416	5.1
8	Venezuela	27,029	4.4
9	U.K.	19,702	3.2
10	Kazakhstan	16,872	2.7
11	Italy	10,704	1.7
12	Germany	9,659	1.6
13	Others	180,092	30
	Total	612,700	100

¹⁵⁹ Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2008*, 中国汽车工业年鉴 2008 (*China Automotive Industry Yearbook 2008*). Page 173, and Huajin Xinxi Wang, (2007) 2007 Wuoguo Qiche Zhuyao Chukou Guojia de Tongji Shuju Tu, 2007 年我国汽车主要出口主要国家的统计数据图 (The Primary Exporting Countries for Chinese Automobiles, 2007 Statistics), <<http://www.chinaeir.com.cn/freedata/zhuze.asp?url=20081125171730.html>>, Beijing ; Zhongguo Qiche gongye Xiehui, (2008) 2007 Nian Qianshiwei Chukou Guojia Jinger Paiming, 2007 年前十位出口国家排名 (The Top Ten Export Countries for Chinese Automobiles), <<http://www.auto-stats.org.cn/xxkd.asp>>, accessed 11 May 2009.

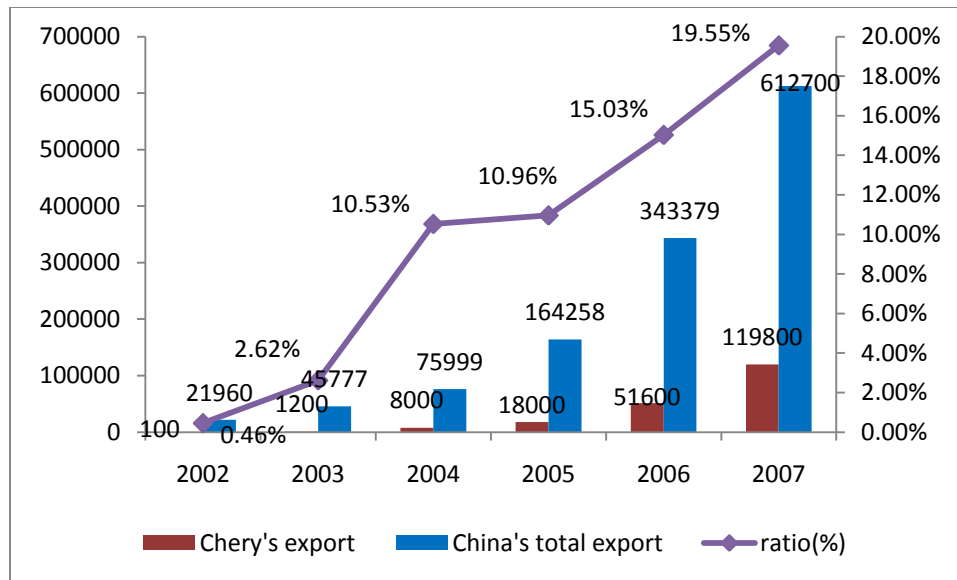


Figure 4. 9. The export and percentage of Chery Automobiles and China's total vehicle export, 2002-2007¹⁶⁰

Chery Motor Investment is not part of Chery Automobile but is rather a corporate investment division of Chery. In January 2008, Quantum LLC, an American extension of an Israeli large holding company, entered a separate JV agreement to build SUVs and passenger cars with Chery Motor Investment at Wuhu in Anhui Province. The new venture Chery-Quantum Motor Ltd was only intended for the overseas market, including exporting the models 'B21', 'B22', 'T21' and 'M21', and with a production capacity that was estimated to be 150,000 units. Chery also secured an exclusive network in South

¹⁶⁰ Qiche Pindao, 16 August 2007, Qiche Pindao, 2007, 'Qirui Qiche Zhuanti: Shichang Xiaoshou Zhanlue Hezuo, 奇瑞汽车专题: 市场销售战略合作 (Chery: Marketing Strategy in Sales and Cooperation)', <<http://auto.21cn.com/news/qiye/2007/08/16/3420033.shtml>>, accessed 9 May 2009. Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2007*, 中国汽车工业年鉴2007(China Automotive Industry Yearbook 2007). Page 283.

America for representing its own products, with the potential to increase its export numbers.

Chery's intention to export to the USA, the most competitive automotive market, has been no secret in its global strategy. In 2006, America's financially troubled auto giant Chrysler negotiated with Chery to produce vehicles with small engines, to be branded in Chrysler's logo and name and to be sold in the USA and South America. While Chrysler thought it a good opportunity to import smaller cars from China to compete with the foremost Japanese automakers such as Toyota and Honda, Chery considered it a natural bridge, through the sales and marketing network of the legendary Chrysler, to connect with a larger and more competitive market. Both parties had negotiated over numerous meetings and signed several strategic memorandums, subject to Chery's vehicle's passing the safety and carbon dioxide emissions standard of the USA. In December 2008, however, the deal failed to go through and both parties decided to drop their plan and pursued their own separate courses.¹⁶¹

2004 was a difficult year for almost every car maker in China, including Chery, due to a general slowdown in the industry, although Chery still enjoyed a marginal increase of 1.4 percent in production. As shown in Table 4.6 below, 2005 was a remarkable year for Chery, as it again saw over 100 percent increases in sales and production over the previous year. In 2006, production impressively increased 60 percent over that of 2005. In the single month of March 2006, Chery's sales for the first time in twenty years

¹⁶¹ Forbes, Wang, Tina, 2008, Forbes 'Chrysler Squashes Chery Deal', <http://www.forbes.com/2008/12/09/chrysler-cheri-ford-markets-equity-cx_twdd_1209markets4.html>, accessed 14 June 2009 Chrysler was reorganised financially and merged with Italy's Fiat SpA in June 2009.

overtook all other car makers in China, including the JVs. In 2006 and 2007, the sales of Chery ranked fourth in the country, and it had increased its market share to 7.16 percent nationwide, although this dropped slightly to 6.43 percent in 2007.

Table 4. 6. Chery's production and market share, 2000-2007¹⁶²

Year	2000	2001	2002	2003	2004	2005	2006	2007
Chery's production	2,000	28,160	50,155	85,349	86,568	189,158	305,236	381,000
Production in China	605,000	816,834	1,261,807	2,189,682	2,505,421	3,195,962	4,261,757	5,925,350
Chery's Market share	0.33%	3.45%	3.97%	3.90%	3.46%	5.92%	7.16%	6.43%

¹⁶² Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian*, 2002-2008, 2002, Page 381; 2003, Page 415; 2004, Page 407; 2005, Page 480; 2006, Page 506; 2007, Page 450; 2008, Pages 475-476. The figure for Chery's production in 2007 is an estimate, not a final reported figure.

Table 4. 7. Profit margin of Chinese automakers (both JVs and Indigenous), 2004-2007¹⁶³

Company name	2004	2005	2006	2007
Shanghai GM	19.60%	11.10%	9.35%	7.29%
Guangzhou Honda	17.40%	13.50%	11.89%	11.28%
FAW VW	6.20%	0.70%	2.55%	7.54%
Shanghai VW	9.40%	2.80%	4.55%	6.00%
Chana Ford	12.50%	3.20%	6.15%	7.61%
Chana SUZUKI	6.10%	3.20%	3.55%	1.30%
DMC Honda	7.00%	8.10%	11.35%	11.22%
CITROEN	-6.10%	-3.00%	5.24%	1.75%
Chery	3.70%	1.10%	2.10%	0.86%
Geely	16.20%	15.20%	10.60%	2.15%
FAW TOYOTA	6.10%	3.20%	5.87%	9.50%
Beijing Hyundai	11.10%	6.00%	5.15%	3.34%
Company average	9.10%	5.43%	6.53%	5.82%

Though Chery's production and sales have continued to grow, its profit margin has never been high. As seen above in Table 4.7, between 2004 and 2007 its reported profit margin never exceeded 3.7 percent, and was below the industry's average. On the other hand, Geely's performance had been much better, despite lower sales and low-end products and pricing. In its immediate plans for the future, Chery intends to build one million automobiles units, one million engines, and 800,000 transmission units by 2010. To achieve this goal, Chery estimates that it needs to raise a capital of approximately US\$400 million. Yin has mentioned more than once that Chery would not oppose a

¹⁶³ ANON., (2007) 2004-2006 Zhuyao Qiche Shengchan Qiye Shuiqian Lirun Bijiao, 2004-2006 主要汽车生产企业税前利润率比较 (Profit Margin Comparison of Primary Automobile Manufacturers Before Tax), <<http://www.okokok.com.cn/Htmls/GenCharts/071123/4737.html>>; For 2007, the author of this thesis used data from Zhongguo qiche nianjian, 2008, Pages 470-471, 499-500, 517-518.

partnership with a foreign company, but Chery must develop its own brand based on its own capacity and resources.¹⁶⁴ The Italian automaker Fiat had suffered financial losses in Europe and just terminated its rights with General Motors in February 2005, looking to China for new partners. Fiat first cooperated in 2000 with Nanjing Qiche (Nanjing Motors), a domestic automobile company from Jiangsu Province, but gained very little position in the market. Nanjing Motors later merged with SAIC in 2007, which gave Fiat an opportunity to enter into a business partnership with Chery, and in October 2006, Chery and Fiat entered into an agreement whereby Chery would provide Fiat with 175,000 units of 1.6 and 1.8 litre ACTECO engines annually for Fiat's Chinese market and to meet overseas demand.¹⁶⁵ In August 2007 Chery further signed a letter of intent with Fiat to start a JV structured for equal profit sharing, to manufacture Fiat's Alfa Romeo models with Chery's ACTECO engine. The details of the agreement regarding the sharing of capital and technology remain unknown, but this was the first co-operation model where the Chinese indigenous automobile factory would provide engine products to foreign automobile companies.

In May 2007, Chery entered into another JV with an Israeli company, Quantum, with 55 percent versus 45 percent of the total capital, or US\$150 million, to build in Wuhu a new automobile factory capable of producing 150,000 units of SUVs and passenger cars per year. Two months later, Chery entered into another agreement with Chrysler to provide its ACTECO engine for Chrysler's model 'Hornet'. It is estimated that their new factory with a planned capacity of 300,000 units to be constructed in Wuhu, Anhui Province will

¹⁶⁴ Interview # 2, Chery

¹⁶⁵ *Ibid.*

be completed by 2009.¹⁶⁶ Combining the new production capacities resulting from the tie-ups with Fiat, Chrysler, and Quantum with its own production capacity, Chery could reach its goal of producing one million cars a year. As shown in Table 4.8, Chery's international partners and their planned projects of building engine and cars started in 2006 and 2007.

Table 4. 8. Chery's international cooperation partners¹⁶⁷

No.	Signing time	Partners	Beginning	Engine or vehicle models	Planned products(units)
1	October 2006	Chery-Fiat	2007	ACTECO 1.6L\ACTECO1.8L	100,000
2	August 2007	Chery-Fiat	2009	Alfa Romeo\Chery vehicles	175,000
3	May 2007	Chery-Quantum	2009	A6\ Tiggo\ T21 SUV \M21	150,000
4	July 2007	Chery-Chrysler	2009	Dodge Hornet\A1\A3	300,000

4.3.3. Chery's 'QQ': troubles and successes

To achieve economies of scale, Chery found a way of cutting costs through the use of some domestically-made equipment rather than depending on imported factories and machinery. 'QQ', a name that originally became popular in the 1990's as one of China's most popular internet companies, was adopted by Chery for its second model. Its 4G18 engine came from Dongan Automotive Engine (DAE) at Harbin in Heilongjiang province, which had a JV with the Japanese engine company, Mitsubishi Motors. Many indigenous

¹⁶⁶ *Ibid.*

¹⁶⁷ ANON., 2007, Hexun Xinwen 'Qirui Feiyate "Duideng" Hezi, 奇瑞菲亚特“对等”合资 (Chery and Fiat will Establish JV in 50/50 Percentage)', <<http://news.hexun.com/2007-08-08/100149885.html>>, accessed 13 May 2009 and ANON., 2008, 'Pandian 2007: Qirui Maixiang Xingjieduan de Diyibu, 盘点 2007 奇瑞迈向新阶段的第一步 (General Review 2007: Chery's First Step to Move to a New Stage)', <http://adcenter.xinhuanet.com/misc/2008-01/14/content_12213600.htm>, accessed 13 May 2009.

Chinese companies such as Hafei Motor and Changhe Automobile had purchased the same engines from DAE and built chassis platforms to suit the displacement of the engine. The ‘QQ’ model, according to a Chery employee, was designed by their subsidiary company Jia Jing by the experienced engineers who had left DMC.¹⁶⁸

Similarities between Chery’s ‘QQ’ model and Daewoo’s ‘Matiz’ model quickly became obvious. When Daewoo merged with GM, the ‘Matiz’ model was renamed the Spark and sold under Shanghai-GM’s trade mark. In April 2003, Daewoo began exploring litigation for copyright infringement and delegated the legal case to the Fan Ya Technology Company Limited to investigate. The result of the investigation led to a lawsuit against Chery for violating Daewoo’s design rights, claiming RMB 75 million for financial loss, attorney fees of RMB 5 million, confiscation of all revenues received through sales of the ‘QQ’, and a ban on Chery’s dealers further selling any of the model. According to GM-Daewoo’s legal counsel, Huang Jiande, to protect GM’s intellectual property was to protect GM’s primary interests. To their disappointment, Chery did not respond to the claim and continued to export the ‘QQ’ overseas.

When asked about this case, Zhang Zhigang, an official from the National Intellectual Property Protection Agency, stated that it found that GM’s ‘Matiz’, which was purchased from Korean Daewoo, had a similar appearance and body style as the Chery’s later ‘QQ’. However, because General Motors had never trademarked its design, the model ‘Matiz’ could not be protected under Chinese law. Lu Feng, a professor of business administration at Beijing University, supported this argument and stated: “Chery

¹⁶⁸ Interview # 2, Chery

developed its ‘QQ’ body style through reverse engineering of the ‘Matiz’. Japanese and Korean auto manufacturers have used the same process in their automobile industries.”¹⁶⁹ However, the litigators still claimed that Chery had infringed Daewoo’s copyrighted intellectual property on the grounds that both the ‘QQ’ and ‘Matiz’ have round headlamp assemblies and their body style look alike. On 18 November 2005, after a three-year legal battle, GM-Daewoo and Chery Automobile reconciled their differences without further litigation.

Another claim was brought by the software giant Teng Xun, the largest networking company in China, which had registered its trade mark ‘QQ’ in the internet industry. Teng Xun strongly protested against Chery naming its model ‘QQ’ and claimed that Chery should withdraw its trademark application. Teng Xun’s legal case was a lost cause because Chery went to the National Trademark Board and obtained its automobile trademark ‘QQ’ in an entirely different production classification. After resolving its legal battles, Chery’s ‘QQ’ became a favourite choice with car buyers due to its fashion styling at a price of RMB 33,000 (approximate US\$4,500) and it sold more than 80,000 units in 2003, more than 60 percent of Chery’s entire vehicle production in that year. At the same time, Chery pushed its sales through new marketing techniques by distributing its various models through different tiers of dealers. As shown in Figure 4.10, first tier dealerships could represent all models including the popular models such as ‘QQ’, ‘Qiyun’, and ‘Cowin’, while second tier dealers could sell less popular models such as ‘Karry’,

¹⁶⁹ Lu, Feng, *Fazhan Woguo Zizhu Zhishi Chanquan Qiche Gongye de Zhengce Xuanze*, 发展我国自主知识产权汽车工业的政策选择, (Policy Implications of the Self-development of Intellectual Property Rights in the Automobile Industry). Page 35.

‘Estar’, and ‘Tiago’. Figure 4.11 explains Chery’s distribution in the period 2005 to 2007, when first and second tier dealers did the most sales. The marketing strategy was designed to ensure that dealerships would not only favour certain fast-moving models and should push Chery’s full line of products.

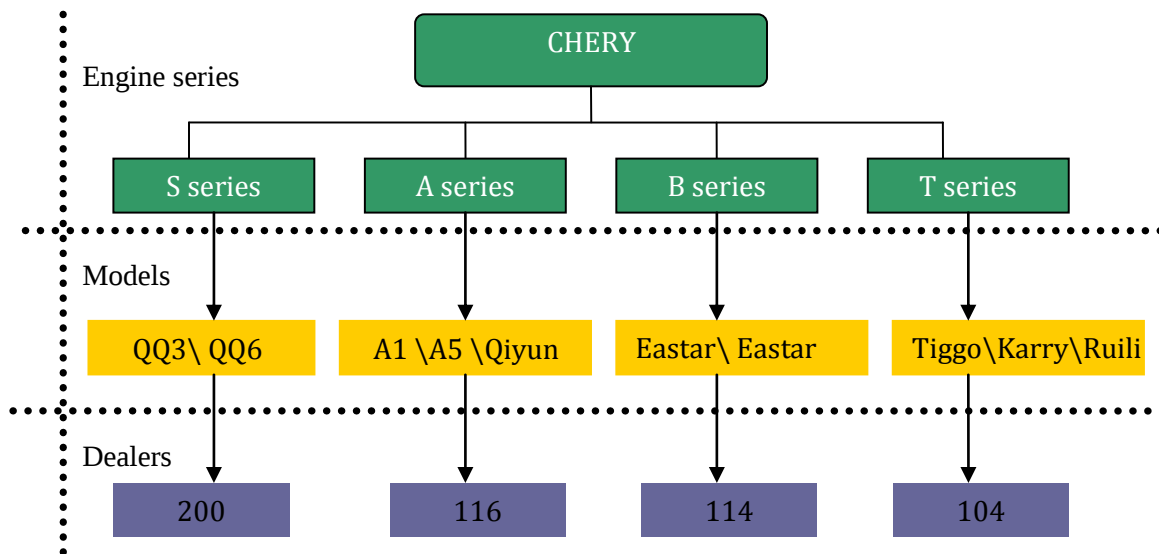


Figure 4. 10. Chery's dealership system, 2005-2007¹⁷⁰

¹⁷⁰ ANON. Xinlang Qiche, 2007, 'Qirui Yingxiao Moshi Xingjie, 奇瑞营销模式新解 (Analysis of Chery's Marketing and Sales)', <<http://auto.sina.com.cn/news/2007-05-28/1512279037.shtml>>, accessed 8 May 2009.

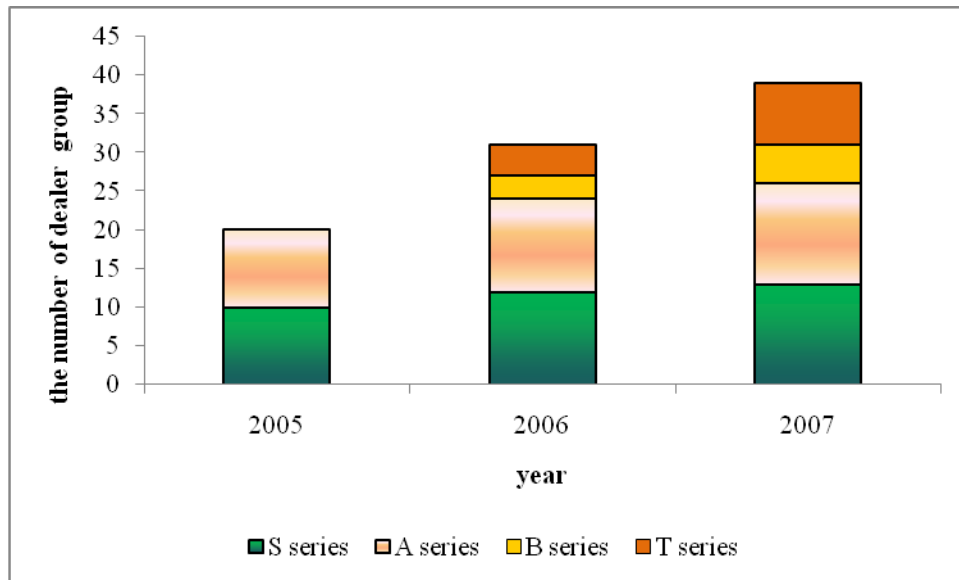


Figure 4. 11. The growth of Chery's dealer groups, 2005-2007¹⁷¹

4.3.4. Alternative sales networking

The effectiveness of Chery's unconventional multiple-dealership and marketing methods has been questioned but, since their introduction and implementation, Chery's sales have been more widely distributed and depended less on the popular but low-priced 'QQ'. In 2004, Chery's annual sales and production was near 90,000 units, most of which was from the 'QQ', but its percentage dropped to 61.4 percent in 2005 and further to 43.3 percent in 2006.¹⁷² By 2007, the number of dealerships had doubled its 2004 figure to 534, and the unit sales figures for each dealer increased four-fold to 960. Due to the efficiency of multi-level distribution, the sales per dealer increased from 266 units per dealer in 2004 to 960 units in 2007, as shown in Figure 4.12.

¹⁷¹ *Ibid.*

¹⁷² Zun, Liang, *Qirui Chuangzao, 奇瑞创造, Innovation in Chery* (Beijing: China CITIC Press, 2007). Page 129.

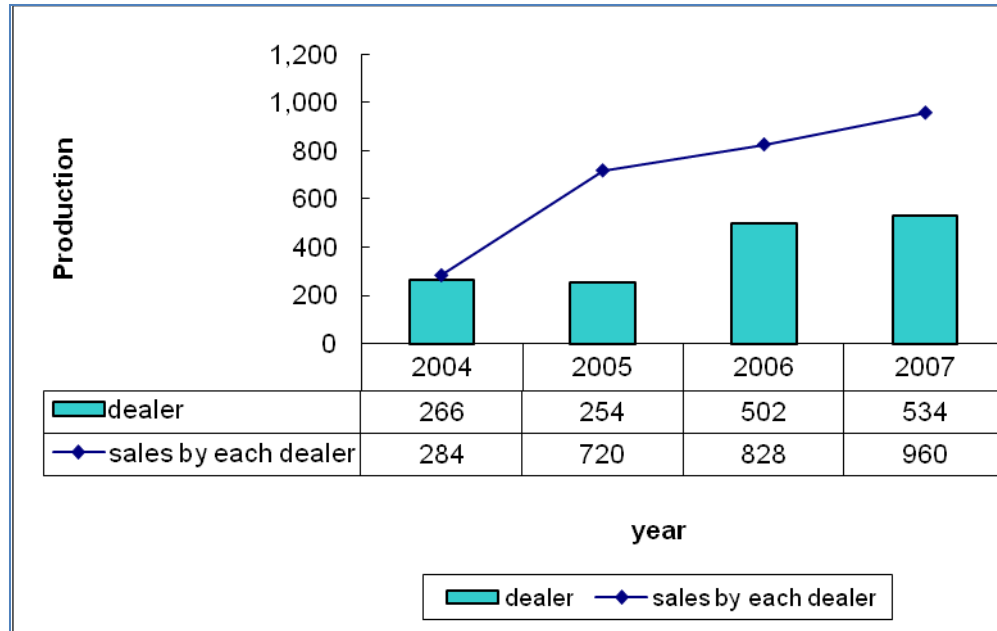


Figure 4. 12. Chery's sales per dealer (in units), 2004-2007¹⁷³

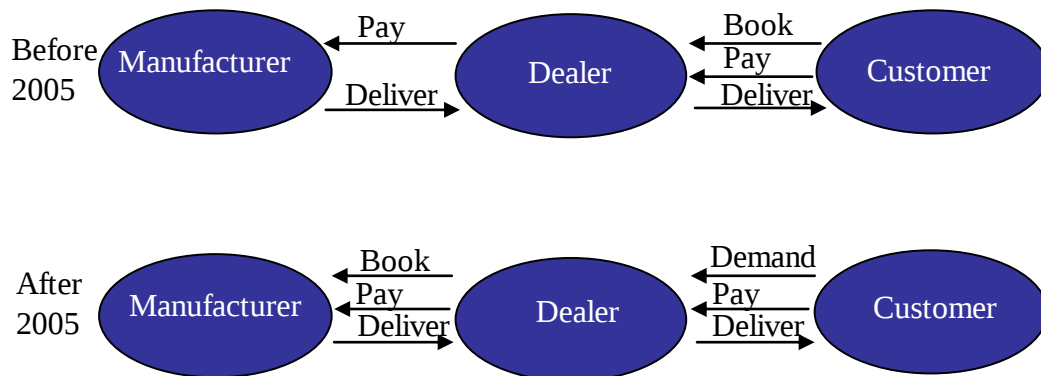


Figure 4. 13. Chery's sales and payment flow before and after 2005¹⁷⁴

¹⁷³ ANON. Xinlang Qiche, 'Qirui Yingxiao Moshi Xingjie, 奇瑞营销模式新解 (Analysis of Chery's Marketing and Sales)', accessed 8 May 2009.

¹⁷⁴ *Ibid.*

Before 2005 Chery had been responsible for both dealers and direct customers' demand and delivery. The dealer simply functioned as an agency without focusing on understanding the customer's demands or supplying this information to the manufacturer. Financially, the dealers carried little risk as they placed their order with the manufacturer upon receipt of payment from the customer. The dealer carried little or no inventory, which left the financial burden on the shoulders of the manufacturer. Figure 4.13 above illustrates Chery's sales and payment flow through the dealer to the ultimate buyers. Before 2005, Chery allowed their dealers to take delivery of the automobile and collected the money from them after they sold their vehicles. After 2005 Chery revised its payment plan by demanding their dealers make payments upon taking delivery, regardless of whether they shifted the stock. The dealer was to play a part not only as a sales agency but also as a marketing agency which must understand the needs of the customer and forecast market demand. Chery built its business relationship on a business-to-business basis by letting the manufacturer share the responsibility and risk with the agency that represents it. Thus, the dealers managed their inventory level better based on market demand and controlled their costs more efficiently. As manufacturer Chery could expect to raise customer satisfaction and upgrade product value, and manage its cash flow more efficiently.

In 2005, Chery started to plan a sales network by increasing their dealership geographically across the country starting vertically from North Harbin, via Changchun, Shenyang, Beijing, Shijiazhuang, Zhengzhou, Wuhan, Changsha, and Guangzhou,

covering ten provinces and twelve major cities, and horizontally from Shanghai westward, via Suzhou, Nanjing, Hefei, Xian, Lanzhou and on to the provincial capital Urumqi of Xinjiang, covering seven provinces and nine populated cities. Compared to other Chinese indigenous automakers, Chery had done more fundamental networking. The layout of its distribution in the Chinese territory forms a cross, as shown in Figure 4.14 on the following page. The red dots represented Chery's existing master distributors and the blue dots the master distributors to be built along the major national highways, 102, 107 and 312. This gave Chery a strategic exposure to cover China's most populated provinces and best consumer markets. The American rating company J.D. Powers surveyed Chery's customer satisfaction index, giving it an overall rating of more than 1,000 points, which was encouraging for Chery.¹⁷⁵

¹⁷⁵ Interview # 2, Chery

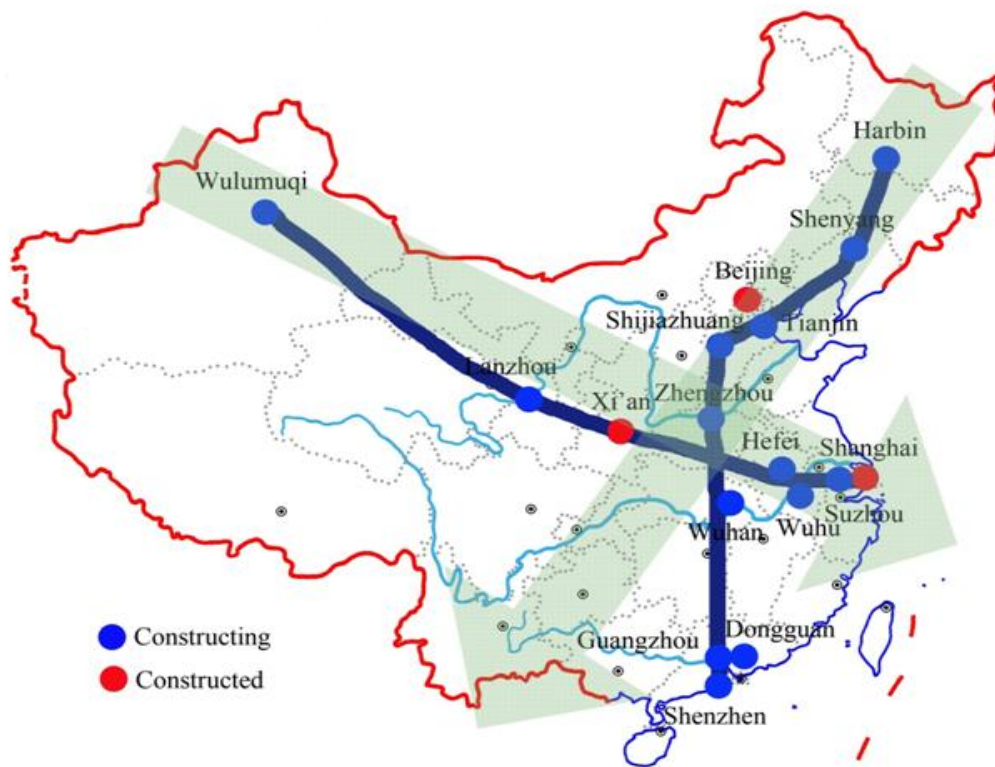


Figure 4. 14. Chery's distribution pattern in China¹⁷⁶

Clearly, Chery's performance was much appreciated by the Chinese people as it is considered a national company that is not controlled or influenced by any foreign automobile companies. The public perception is that without Chery and Geely's, the top ten car factories would all have been JVs. Without Chery, there would not have been any export of cars from China and earning of foreign exchange. Chery's export in the first half of 2007 was 53,136 units, which is more than double the figure of China's total vehicle export (23971 units) for the previous 55 years (from 1949 to 2004). In the eyes

¹⁷⁶ ANON. Xinlang Qiche, 'Qirui Yingxiao Moshi Xingjie, 奇瑞营销模式新解 (Analysis of Chery's Marketing and Sales)', accessed 8 May 2009.

of government, the competitive edge of China's indigenous automakers was far behind their JV partners.¹⁷⁷

4.3.5. Zhan Xialai and Yin Tongyao: the two men behind Chery

Chery attributes its success to its determination, vision, foresight and elite leaders. An overbearing sense of self was the price of admission to the master class, and both Zhan and Yin had it. They had made their mark in the Chinese automobile industry but then found their task more daunting than even they had expected. Certainly other events have helped to shape Chinese indigenous factories, but the constant has been the presence of these two men despite of their low-profile images.

Zhan was born in August 1955 in the poor village of Wuhu where Chery was to be founded. From a humble background, he joined the Chinese Communist Party at an early age and later became a Liberation Army officer. He majored in Chinese linguistics at Anhui University and after graduation started to work for the Anhui provincial government in 1982. Due to his experience in the army and him being witness to the political movements of the Cultural Revolution, he acquired a rather resolute character despite the fact that his employees labelled him a 'hot shot' with an explosive temper.¹⁷⁸ Soon he was promoted to the Wuhu City government and assumed various jobs that included assistant to the Mayor, and Vice Mayor, and finally becoming Mayor in August 1992.

¹⁷⁷ Interview # 2, Chery

¹⁷⁸ Zun, *Qirui Chuangzao, 奇瑞创造, Innovation in Chery*. Page 150.

Anhui was an agricultural province that would remain backward without industrial output and Zhan wanted to introduce industrial activities that would stimulate economic growth. In 1995, Anhui Province planned a confidential project '951', to promote and support the automobile business. Zhan recruited the Anhui local, Yin, as a capable organiser who was working for FAW as the general manager of the assembly factory. They shared similar local backgrounds and the same vision regarding how to industrialise Anhui Province so they worked closely together to organise Chery. Zhan was fascinated by automobiles but had no automotive engineering background. He independently studied and became able, from time to time, to hold his own in arguments with Chery's engineering staff on technical issues.¹⁷⁹ Yin's automotive expertise and executive experience helped relieve Zhan's burden and responsibility in leading Chery's operation. They seemed to complement to each other's character and ability in Chery's top management.

Yin was born in 1962. He attended junior and senior high school in Wuhu and attended Hefei Industrial University, Anhui, gaining in 1980 a bachelor's degree in automotive engineering, then working for FAW as a technician between 1984 and 1989. Later he was sent to the USA for advanced training, and took a logistics job in FAW upon returning to China. He was then dispatched to Germany in preparation for the establishment of FAW-VW and stayed until 1996 when he met Zhan who asked him to join Chery. In the end Yin, through his fine understanding of men and networking in Hefei Industrial University and FAW, helped Zhan recruit many managers from other

¹⁷⁹ Interview # 2, Chery

Chinese car companies. During his employment with Chery he won the National Medal from the All-China Federation of Trade Union (2004) and the prestigious National Model Worker award (2005).¹⁸⁰

Due to the conflict of interest stemming from his position in an SOE, Zhan resigned from his chairmanship, and recommended Yin to assume his post. By February 2004, Yin had undertaken all three top ranking jobs at Chery becoming the party secretary of the factory, the chairman, and also the president. As Chery gained its reputation and popularity in the automobile industry, both Yin and Zhan have retained very low profiles. They do not fly business class or check in at five-star hotels, and disliked conferences and public speeches. According to one of their senior employees, both Yin and Yin eat simple meals and live frugally, and are workaholics who normally work seven days a week with long hours each day. Yin, as a leader of an SOE, acts like a private business entrepreneur and possesses a business oriented character.¹⁸¹

Because Chery was a young and developing company, Yin has experienced some insecurity. He always told his employees in meetings, “Microsoft is 18 months from bankruptcy”, adding that “Chery is only 18 days from going bankrupt.”¹⁸² As Chery used a low pricing strategy to penetrate the market, the profit margins were poor and the investment huge, which forced Chery to seek bank loans that government would

¹⁸⁰ Zhongan Wang, 2006, 'Qirui Qiche Dongshizhang Yin Tongyao Huo 2005 Jingji Niandu Renwu, 奇瑞汽车董事长尹同耀获 2005 经济年度人物 (Yin Tongyao Elected as Leading Figure in Business Achievement 2005)', <<http://xhs.anhuinews.com/system/2006/01/12/001418098.shtml>>, accessed 20 May 2009.

¹⁸¹ Interview # 2, Chery

¹⁸² *Ibid.*

guarantee. When Chery gained its market place, Yin realised that the biggest concern was not capital, profit, or governmental support, but its lack of depth in management talent and self-developed engine technology. Both Yin and Zhan concurred that Chery was not short of hardware in building the plants, assembly lines, and equipment, but that Chery lacked professional human resources. Yin always used the metaphor that the State JV is a 'weijun' (puppet army) like the Nationalist Government during the World War with Japan, and Chery is a 'kangyou' (guerrilla force), like the rising communists before the establishment of the PRC.¹⁸³ Yin recruited executives from not only FAW, DMC and SAIC, but also from the JVs in China to impart their ideas and experience to Chery. For instance, in 1996, the engine department of Chery was headed by Feng Wutang, who participated in the development of the imported Mitsubishi engine CA488. In 2003, Feng Jianquan, a veteran FAW automobile engineer, joined Chery as the chief engineer in contracting with Austria's AVL to design certain engines exclusively for Chery. Lu Jianhui, a professor and specialist in combustion engines at Beijing Qinghua University, took charge of the technology department to plan the development of the engines and transmissions.¹⁸⁴

In 2003, with some persistence, Yin persuaded Chinese-American Xu Ming, a senior member of the American Society of Automotive Engineering and a taught engineer who once worked in GM, Ford and Visteon, to head Chery's Automotive Engineering Centre. Investing approximately US\$70 million in the centre and hiring about 800 engineers and researchers, Xu Ming, under Yin's guidance, established eleven departments. These

¹⁸³ Zun, *Qirui Chuangzao*, 奇瑞创造, *Innovation in Chery*. Page 153.

¹⁸⁴ Interview # 2, Chery

dealt with design and production of auto body, style and model, chassis, combustion engine, automatic transmission, Enterprise Resource Planning, Computer Aided Engineering, Computer-Aided Design system testing, energy and environment, electronic controls and brand management. The setup of this centre covered most of the basic requirements that needed to be in place in order to develop vehicle models.

With the recruitment of Xu Ming, more overseas-trained Chinese automotive engineers followed suit and returned to China to work for Chery. Many of them chose to work with a patriotic zeal for the indigenous Chinese factories and would settle for less income than they had received before. One example was Xin Jun, who was the vice chairman of the North American-Chinese Combustion Engine Association in 2003 and gained his qualification by working for American Honda. He learned about the opportunity offered by Chery on a visit to the Chery engine department and was so moved by their pursuit to create a truly indigenous Chinese automobile factory that he decided to join them, bringing with him his considerable expertise in automotive engines. Another example is Gan Lei, a Germany-trained physicist and CEO of Siemens' subsidiary VDO in Wuhu. He came on board in April 2005 after an invitation from Yin.

Unfortunately for Chery, the overseas automotive specialists did not seem to have adapted to Chery's corporate culture and soon found it incompatible with their management philosophy. In 2005 and 2007, Xu Ming, Xin Jun, and Gan Lei, who were considered the rising stars in Chery, submitted their resignations. It was inferred that they did not get along with Yin's leadership style and the fact that he showed no respect to the

professionals.¹⁸⁵ Yin argued that it was due to the fact that these newly-arrived overseas employees were not accustomed to the unique way of working in China's emerging economy, and the living style which was not the same as that of developed countries. However, with the company progressing, Yin clearly did not accept suggestions and refused to have his authority challenged.¹⁸⁶ He declared that the foreign-trained professionals were superior in their knowledge but at the same time were inadequate in their understanding of China's unique management systems.¹⁸⁷ Apparently, Yin meant to refer to the fact that Chery was fundamentally a government enterprise that must deal with situations that private firms do not encounter, such as its finance and inter-government relationships.

This is not to say however Yin was inflexible. An interesting episode occurred in 2003, during his trip to Japan when Yin recruited Shinji Terada, a renowned Japanese automotive engineer for over thirty years and a plant management expert from Mitsubishi Heavy Industry. Terada's professional experience also included his time spent helping the Korean Hyundai Motors improve the quality of its products before Hyundai gained independence from Mitsubishi. Contrary to the conventional Chinese attitude towards the Japanese resulting from the two countries' troubled history, Yin entrusted Terada with changing the production line in Chery's factory and even christened one of the production lines after him.¹⁸⁸ With the intention of using Terada's knowledge and

¹⁸⁵ *Ibid.*

¹⁸⁶ *Ibid.*

¹⁸⁷ Zun, *Qirui Chuangzao*, 奇瑞创造, *Innovation in Chery*. Page 168.

¹⁸⁸ Interview # 2, Chery

experience, he delegated a team of between ten and twenty Chinese novice engineers to Terada. As these young trainees learned the skills from Terada, they were then sent to the corresponding production units and a new team was substituted. During this period Terada enjoyed his highly-regarded position and executed commands in a typically Japanese style. As demand for the model ‘Eastar’ suddenly increased in 2004, Yin, under finance and sales pressure, sent a memo to the production division to increase the rate of production in order to meet the need. Terada would not compromise his quality standards and so he refused Yin’s request. He objected to Yin’s interference with his management and insisted on an apology. Ultimately Yin yielded to Terada and even commented that Chery needed more responsible managers like Terada to respect his work and Chery’s consumers.¹⁸⁹ In spite of many disputes and turnovers of personnel, as of 2007, Chery has recruited approximately 6500 employees in management and technology and has indirectly established a components chain that had hired more than 50,000 people in Wuhu alone.¹⁹⁰

One notable thing was Yin’s perception regarding the future of the Chinese automobile industry. He understood the gap in technology between China and the leading multinational auto powers, and at the same time he was unafraid to admit it. In his interviews with the media, he stressed that China must not compete in a regional market but rather in a global marketplace, striving to build cars of pedigree ‘Chinese brand’, but

¹⁸⁹ Zun, *Qirui Chuangzao, 奇瑞创造, Innovation in Chery*. Page 168.

¹⁹⁰ Interview # 2, Chery

considering the world market and building a ‘global brand’.¹⁹¹ However, at this stage in its development, Chery was not a world brand and had to compete in the low end market in terms of pricing. Yin stated that when a JV car, such as SAIC-VW’s model ‘Santana’, had a defective door handle on delivery, the customer would at most ask for a new part. But when Chery delivered a new car with a faulty door handle, the customer would simply ask for a full refund on the purchased car. Yin also understood that Toyota is a long established company that has slowly built up its reputation and the surviving of Chery would be a ‘long race’.¹⁹²

4.3.6. How the nucleus of technology was accumulated

In times of difficulty, Chery did not waver in its decision to forge its own brands. When capital was short, many national and international enterprises had flown to Wuhu in private plane with offers to relieve Chery’s financial hardship and buy its stocks. One of the most attractive terms was to purchase 50 percent of Chery’s rights and was flatly rejected by Yin on the grounds that Chery would never lose its own brand. Yin also questioned the issue in technology transfer and the cost of paying for it. Yin felt that Chery might follow the same path as those state enterprises that played passive roles in their JVs and never owned intellectual property rights of the products. If Chery were to form JVs with MNCs it would have to rely on foreign expertise and personnel, which

¹⁹¹ Li, Wei, 2008, Sanlian Zhoubao 'Qirui Kai Wang He Fang, 奇瑞开往何方(Where Chery Drives To)', <<http://club.autohome.com.cn/bbs/thread-c-530-1147108-1.html>>, accessed 15 June 2008.

¹⁹² *Ibid.*

would further burden the less-experienced Chery. In an interview with the country's largest television network China Central Television, Yin stressed once again that the aim is a 100 percent indigenous Chinese automaker.¹⁹³

Yin was annoyed when he discovered that the Mitsubishi engines 491 and 492 (replaced by 4G engine in 2002, as to be explained in Section 7.4 of Chapter 7, were made with outdated engine technology dating from the 1970's, and yet were still dominating the Chinese indigenous automobile market. His efforts in advocating the development of Chery's engine were not initially successful. In 2001, Zhu Hong, a PhD. graduate from Qinghua University with a major in automobile engine design became the Chief Engineer in Chery's engine design department. He admitted that his department hardly understood one third of the technology of developing engines and the remaining two thirds was an area entirely 'unknown' to them. In other words, Chery's engineers had some knowledge in the function of the engine and in the modification of certain components, but they were lacking the knowledge and experience to develop a complete marketable engine unit and models.¹⁹⁴

Chery's core technology development started in late 2003 and soon developed to a level that was envied by other indigenous Chinese auto companies and which shocked its JV competitors. Knowing that the hardest parts to acquire were the engine and transmission, Chery had to establish and store experimental data for the performance test and tooling

¹⁹³ The interview was on 10 December 2005 and was shown on the National TV network, CCTV Ouyang Danxia, 2005, 'Chuangxin Luentan (4) Yin Tongyao, 创新论坛--尹同耀 (Innovation Forum--Yin Tongyao)', <<http://english.cctv.com/program/jjbx/s/20051220/101992.shtml>>, accessed 15 June 2008.

¹⁹⁴ Li, 'Qirui Kai Wang He Fang, 奇瑞开往何方 (Where Chery Drives To)', accessed 15 June 2009.

development. Chery's management realised that without dependence on any partner, the company must find an engine source in order to survive and could not just use 'reverse engineering' to imitate other companies products. Before the development of its own engine series, Chery had to have a total plan that included the initial positioning of its product, car and model design, analysis of the target market, and the establishment of R&D. This was because, Yin said in an interview, "It is impossible to imagine a global growing car company that does not have its own engine department."¹⁹⁵ In order to achieve economic and practical feasibility, Yin had several meetings with representatives from Brilliance Auto and Hafei Motors in the Hainan district in 2003, held with the aim of studying the viability of developing engines jointly. However, this project ran into some resistance and pressure, which, according to Yin, came from 'certain larger enterprises' (i.e. the Big Three) because 'they do not wish to see Chery grow too quickly'.¹⁹⁶

Time was pressing and in 2002, Chery adopted an alliance strategy by contracting the Austrian engine specialist firm AVL to build a series of combustion and diesel engines from 0.8 litres to 4.0 litres, totalling 18 different displacements. In the automobile industry, the outsourcing of engine building had become commonplace globally. In 1984, GM, for instance, had a venture with Toyota in California to build the small car 'Nova' by using Toyota's Corolla 1.8 litres engine. Iacocca revived the once dying Chrysler Corporation by using Mitsubishi's 2.4 to 3.0 litres engines for its popular mini-van

¹⁹⁵ *Ibid.*

¹⁹⁶ Liu, Tao, 'Yin Tongyao Yingkao Qirui, 尹同耀应考奇瑞 (Yin Tongyao Brings Challenge upon Chery)', accessed 23 May 2009.

models the Plymouth ‘Voyager’ and Chrysler ‘Town and Country’. Working with a company like AVL as a mentor was a quick step towards Chery building engines. Between 2003 and 2005, engineers from Chery had participated in the development of 18 various engine types with AVL.¹⁹⁷ Even so, Chery was not entirely satisfied with the cooperation with AVL and argued that AVL’s engine design was too academically-oriented and expensive to develop, that the ratio of price to quality was poor, the performance was inferior, and fuel consumption was unsatisfactory. Chery was looking for a better business partner, ideally, looking to work with Toyota’s engine factory.¹⁹⁸

Unlike SAIC or FAW, Chery was not supported by central government backing and had to deal with its limited financial resources until it attracted national attention as an indigenous automobile maker at later stage. In 2003, the local government in Anhui Province offered Chery a 70 million RMB loan worth a total of 560 million RMB interest-free over eight years.¹⁹⁹ The biggest help came from the National Development Bank in 2004 which offered, under the guidelines of the eleventh Five-year Economic State Plan’, 2.4 billion RMB (approximately US\$300 million) as the first part of loans totalling 13.4 billion RMB to be used to build and develop the core engines. Realising that money would be a constant issue as the company expanded, Chery faced up to the fact that it would have to go public for capital. Because the stock market stipulates that only corporations with shareholders can be listed, Chery’s status as state enterprise would

¹⁹⁷ Zun, *Qirui Chuangzao*, 奇瑞创造, *Innovation in Chery*. Page 106.

¹⁹⁸ Li, ‘Qirui Kai Wang He Fang, 奇瑞开往何方 (Where Chery Drives To)’, accessed 15 June 2008.

¹⁹⁹ Hefei Shi Jingmao Ju, 2005, ‘Wuhu Shi Quanli Zhengqu Fuchi Zhengce Zhichi Qirui Gongsi de Fazhan, 芜湖市全力争取扶持政策支持奇瑞公司的发展 (Wuhu City Gives Full Support for Chery's Expansion)’, <<http://hefei.mofcom.gov.cn/aarticle/dongtai/200507/20050700162525.html>>, accessed 11 May 2009.

have to undergo some changes and Chery prepared itself by reorganising its internal financial structure to be listed for public trading at the end of 2008. As at the time of writing, however, the listing has not yet happened.

With the infusion of financial aid, Chery began putting it to good use, firstly with the long term contract with AVL. Chery named its developed engine ‘Chery Power’, a replication of GM’s ‘Chevy Power’ or Ford’s ‘Ford Power’, and aimed to catch up with world standards in performance and emissions control. By March 2005 Chery had invested 3 billion RMB (or approximately US\$750 million) in its 48,000 square-meter engine-building factory in Wuhu. The factory equipment was imported from Germany and Italy, with the capacity to produce more than 200,000 engines per year. In October 2005, Chery christened its engine ‘ACTECO’ covering engine displacement from 0.8 litres to 4.0 litres, from three to eight cylinders, and 100 percent aluminium. Chery claimed that their ACTECO engines had high fuel efficiency, high performance and long life, and complied with European IV environmental protection standards.²⁰⁰ The chief engineer of the engine department, Zhu Hang, proudly stated that Chery had mastered the technology of the multi-point injection gasoline engines and now lagged behind only in Gasoline Engine-Direct Injection technology.²⁰¹ Chery’s model ‘Eastar’, which debuted in 2003 with Mitsubishi engines 4G63 and 4G64, was later replaced with Chery’s own ACTECO engine and renamed ‘MPV V5’ in June 2006. As illustrated in Figure 4.15, Chery’s engine purchase from Mitsubishi made up 12.81 percent of the entire demand for their vehicle production in 2006. Moreover, as shown in Figure 4.16, Chery’s self-

²⁰⁰ Zun, *Qirui Chuangzao, 奇瑞创造, Innovation in Chery*. Page 106.

²⁰¹ Li, ‘Qirui Kai Wang He Fang, 奇瑞开往何方 (Where Chery Drives To)’, accessed 15 June 2008

produced engine made up 88.12 percent of Chery's engines capacity in 2007, when its own engine production grew and dependence on outsourcing decreased.

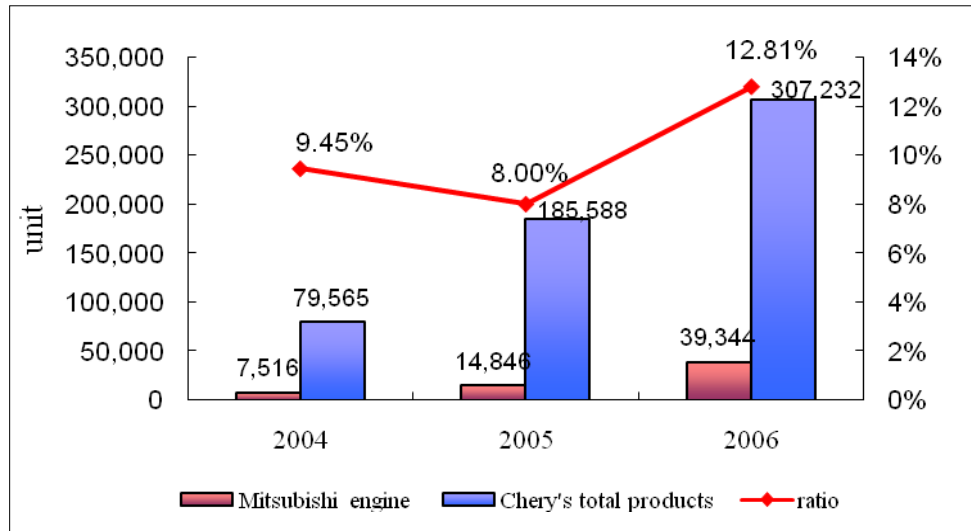


Figure 4. 15. Percentage of Mitsubishi engines used in Chery's vehicle production products, 2004-2006²⁰²

²⁰² The author has combined and edited statistics from 'Zhongguo Qiche Nianjian 2005, 2006, 2007' (China Automobile Industry Yearbook, 2005, 2006, 2007) 2005, Page 518; 2006, Page 543; 2007, Page 488 for the source of main models in Chery; 2005, Page 480; 2006, Page 506, 2007, Page 450 for the source of Chery's total production and 'Zhongguo Qiche Gongye Niandu Baogao 2008' (Annual Report on the Automotive Industry in China, 2008)

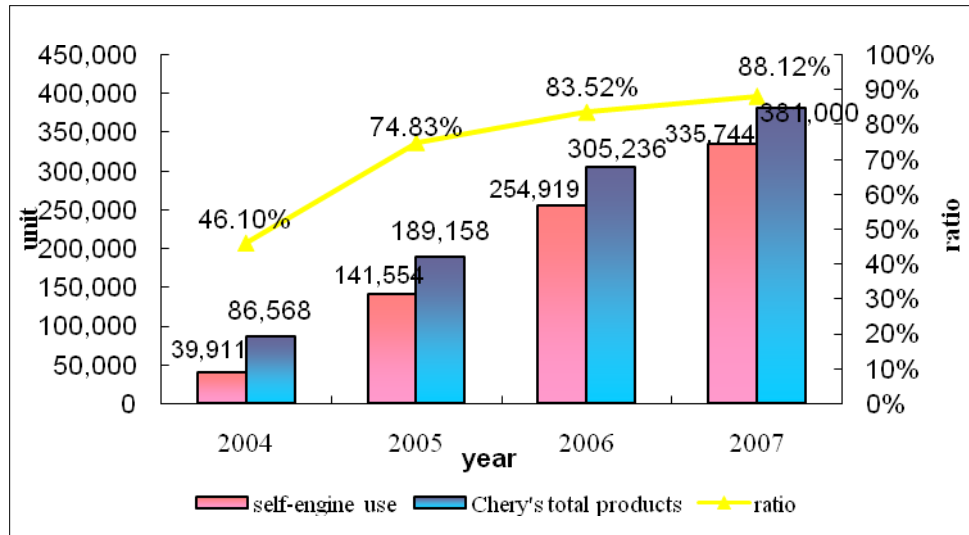


Figure 4. 16. Percentage of Chery's self-developed engine in its vehicle productions, 2004-2007²⁰³

Table 4. 9. Chery's full line of products and price range, 2007²⁰⁴

Type	Series	Displacement	Models	Price/RMB
Mini car	QQ3	0.8 l	MT:Grand\Standard\Comfort\Strength\Exquisite\Luxury	29,800
			AT:Standard\Comfort\Strength\Exquisite\Luxury	-
		1.1L	MT:Standard\Comfort\Strength\Exquisite\Luxury	45,800
Compact car	QQ5	1.1L	new	30,000
		1.3L		-
	QQ6	1.1L	MT:Grand\Standard\Comfort\Luxury	50,000
				39,800
	A1	1.3L	MT:Grand\Comfort\Luxury	-
		1.3L	MT:Comfort\Luxury	49,800
				53,800
				-

²⁰³ Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2008*, 中国汽车工业年鉴 2008 (China Automotive Industry Yearbook 2008). Page 291.

²⁰⁴ ANON., 2008, 'Qirui Pinpai Xinxi, 奇瑞品牌信息 (Data of Chery Brand)', <<http://data.feelcars.com/view/make-85-1.html>>, accessed 14 May 2009.

Lowmed car	Qiyun	1.3L	MT:Standard\Comfort\Luxury\Super	59,800
		1.6L	MT:Standard\Comfort\Luxury\Super	49,800
		New Qiyun1.6L	MT:Standard\Comfort\Luxury\Super	-
		New Qiyun CVT1.6L	AMT: Comfort\Super	79,800
Intermediate car	A3	1.6L	new	80,000
		1.8L		-
		2.0L		110,000
	A5	1.6L	MT:Comfort\Strength\Luxury	69,800
		2.0L	MT:Standard\Exquisite\Luxury	-
	A6	2.0L	new	new
	Estar	2.0L	MT:Grand\Comfort\Strength\Exquisite	89,800
			AT:Standard\Exquisite\Luxury	-
		2.4L	AT: Luxury\Super	109,800
SUV	Tiggo 3	1.6L	MT: Exquisite\Luxury	88,900
			MT double-drive:Comfort\Strength	-
		1.8L	MT: Exquisite\Luxury	129,800
		2.0L	MT: Exquisite\Luxury	
			AT: Exquisite\Luxury	
MPV	Estar cross	MT double-drive: Standard I \Exquisite I AT double-drive:Comfort I\Luxury I		
		2.4L	AT double-drive: Standard II \Exquisite II MT fourfold -drive:Comfort II \Luxury II	
Mini-Van	Karry	2.0L	MT:Comfort\Luxury	99,800
		2.4L	AT: Comfort \Luxury	-
Mini-Van	Ruilin 2	1.6L	MT:Grand\Standard\Comfort	119,800
		1.3L	MT:Standard\Comfort\Luxury	0
				55,800
				-
				60,800
				53,800
				-
				61,800

Table 4.9 illustrates Chery's full line of products which are equipped with the company's own engines. It was a giant step for the Chinese automobile industry when Chery began to control its own engine development technology even though the cost of obtaining it was quite high. Chery was able to meet market demand on its own and set its own development and marketing plan, instead of buying engines from multinational automakers and competing with other domestic automakers who also purchased and applied the same engines. Chery would no longer live at the mercy of engine suppliers. It would at the same time be able to reduce costs because it could set its own specifications for the components, instead of being constrained by Mitsubishi Motors and its affiliated suppliers. In the development of the ACTECO engine, Chery's designers used three-dimensional methods which enabled them to test each model's viability. This not only shortened the gap between the Chinese and multinational automakers in the development of the production system and manufacturing technological process, but also superseded the other domestic automakers in forging brands and controlling cost. A typical example is that the model 'Eastar's 4G63 2.0 litres engine was imported from Japanese suppliers at RMB 20,000, while the ACTECO 2.0 engine produced by Chery cost only RMB 15,000, a saving of 25 percent.²⁰⁵ Further savings came from the waiver of fees or royalties to be paid to many suppliers for their patent of components. Because the engine was produced in large quantities at a lower price than the Japanese brands, the

²⁰⁵ Interview # 2, Chery

saving was even greater.²⁰⁶ Chery soon won international orders from Italian Fiat and became the primary exporter of engines from China.

To prevail in the competitive field of product design, Chery also extended its cooperation with Gruppo Bertone and Pininfarina, the Italian car styling and coach-building factories who had built their reputations by designing cars for the likes of Alfa Romeo, Ferrari, and Lamborghini. Following the marketing strategies of automobile leaders, Chery intended to attract its clients with a distinctively recognisable car personality. With increasing numbers of cooperating international partners in car design and engine building, Chery was able to offer a larger range of models to consumers at competitive prices. In 2006, American Chrysler ratified two engines, A1 and A3, developed by Bertone and Pininfarina, as the mainstay for potential future exports of cars from China to the USA. These successes are built on the indigenous status of Chery, as indeed are the successes of Geely. Unlike the Big Three that manufactured their products using engine technology provided by their foreign partners, Chery and Geely could determine the design and production of their own models, and claimed their products as original, genuinely 100 percent Chinese designed and manufactured. As Figure 4.17 illustrates, by 2007 they had manufactured more than one million engine units, which approximate to 16.59 percent in 2004, and grew to 31.13 percent in 2007 out of the entire vehicle production by the indigenous automakers.

²⁰⁶ Zun, *Qirui Chuangzao, 奇瑞创造, Innovation in Chery*. Page 107.

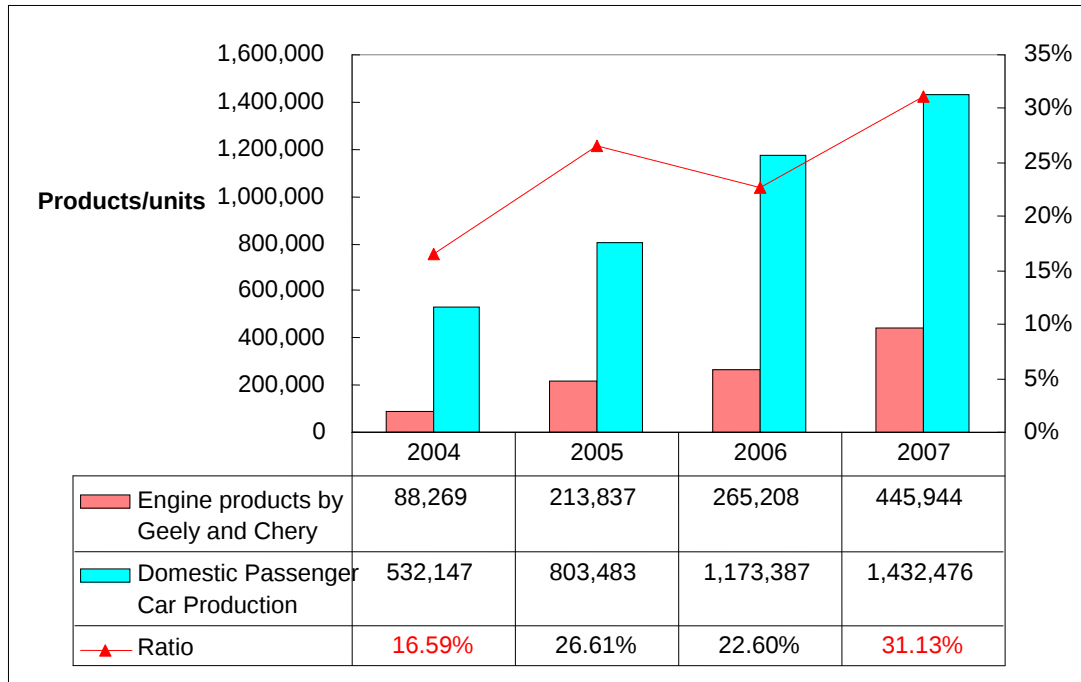


Figure 4. 17. Chery and Geely’s engine production and its share in indigenous automakers production²⁰⁷

4.4 The Chinese Six’s efforts in self-developed brands and models

It is important to ask whether the most protected state enterprises, the Big Three and Small Three made an effort to build an indigenous Chinese automobile industry. In the past five decades (1950s-2000s) the major Chinese automakers, especially those who enjoyed long-term protection, did not produce any models with any self-developed core technology. Before 1991, the oldest Chinese automobile factory, FAW, had only one ‘self-developed’ model, the symbolic ‘Hongqi’ passenger vehicle which was produced with a borrowed engine and transmission from American and European auto factories and

²⁰⁷ Guojia Xinxi Zhongxin (National Information Center) and Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2008* 中国汽车市场展望 (China Automotive Market Outlook 2008). Page 192.

had self-designed but crafted body panels. With fewer than 150 units of production a year, it had been continued only for symbolic reasons and ceased production in 1983. After 1991, FAW begun its JV with Germany's VW and merely produced various models with German design. Throughout the 1990s, FAW did not form any independent divisions that were separate from VW. Its full dependence on the foreign core technology drew many criticisms from scholars and patriotic citizens. The main argument is that China should have its own independent passenger vehicle automobile factory without relying on JVs and foreign technology; even China's first and oldest automobile factory, FAW, joined SAIC and GAIG in JVs, entrapping itself to the point of no return.²⁰⁸

With the increase in the market share of FAW's JVs of FAW/VW and FAW/Toyota in the 2000s, FAW has been able to outsource various technologies from its partners to make its own brand of models. The first thing FAW wanted to achieve was a complete overhaul of its aging model 'Hongqi', a passenger car for top government officials. It negotiated with Toyota and bought their engines which were made for the Japanese luxury models 'Majesta 3.0' and 'Lexus 430', and it re-designed and built the new 'Hongqi HQ3'. The engine of the vehicle was purchased from Toyota and most components were the same as in the 'Majesta' and Lexus '430'. The car made its first appearance in November 2006, but its sales volume was very low, revealing the car still to be a symbolic status vehicle seemingly made in China for high-ranking government officials. Another mid-priced model, 'Besturn', was introduced in August 2006 with an

²⁰⁸ Lu, Feng, *Fazhan Woguo Zizhu Zhishi Chanquan Qiche Gongye de Zhengce Xuanze*, 发展我国自主知识产权汽车工业的政策选择, (Policy Implications of the Self-development of Intellectual Property Rights in the Automobile Industry). Page 12.

engine borrowed from the Japanese Mazda model ‘Mazda 6’ and outsourced body design by Italian George D Pininfarina. FAW claimed the car’s initial development cost was more than RMB 1 billion (or approximately US\$150 million), but it was merely a domestic model in a foreign body style with a foreign engine.

Table 4. 10. The Big Three and Small Three's self-developed models and engine technology²⁰⁹

Company	Models	Production Year	Engine Technology	Country/maker of technology
FAW	HQ3	2006	Toyota Majesta 3.0 L	Japanese
	HQ3	2006	Toyota Lexus 4.3 L	Japanese
	Besturn	2006	Mazda 6	Japanese
	Xiali	1986	8A	Japanese
	Xiali Vios	2002	CA4GB1 1.4 L	Japanese
	Xiali Vios	2002	CA4GB2 1.6 L	Japanese
SAIC	Roewe750	2008	Bought Rover V6 2.5 L	British
	Roewe550	2008	Rover 4 Cylinder 1.8 L	British
	MG 7	2008	Rover 4 Cylinder 1.8 L	British
	MG 3	2008	Rover 4 Cylinder 1.4 L	British
DMC	Jingyi	2007	MMC 4G93D4 1.8 L	Japanese
GAIG	None	n/a	n/a	n/a
BAIC	None	n/a	n/a	n/a

²⁰⁹ The author of this thesis made this table based on the official web links of FAW, SAIC, Dongfeng, GAIG, BAIC introduction of products. For FAW model ‘HQ3’, ‘Besturn’ ‘Xiali’, ANON., 2008, ‘Zhongguo Yiqi Changpin Zhangting, 中国一汽产品展厅 (FAW)’, <<http://www.faw.com.cn/product/index.jsp?pros=1>>, accessed 25 May 2009. For SAIC model ‘Roewe’ and ‘MG’, ANON., ‘Shanghai Qiche Jituan Gufen Youxian Gongsi, 上海汽车集团股份有限公司 (Shanghai Automotive Industry Corporation)’, <<http://www.saicmotor.com/chinese/index.shtml>>, accessed 25 May 2009. For Dongfeng model ‘Jingyi’, ANON., ‘Dongfeng Qiche Gongsi Shangyong Che, 东风汽车公司商用车 (Dongfeng Motor Corporation Commercial Vehicles)’, <<http://www.dfmc.com.cn/product/CarsList.aspx?infoclass=C02>>, accessed 25 May 2009.

As can be seen in the contents of Table 4.10 above, the only division under FAW that started before 2000 was Tianjin Xiali, a factory with outdated engine technology bought from Japan's Daihatsu. But when FAW and Toyota entered into a JV agreement, Tianjin Xiali was merged with FAW in 2002 under government arrangements. This helped Toyota to comply with the Chinese government AIP policy in selecting a maximum of two domestic partnerships, as explained in Section 3.4 of the previous Chapter. Similar to FAW's Tianjin Xiali, SAIC outsourced overseas and purchased its engine technology from the bankrupt British Rover in 2007, producing a new model called 'Roewe' based on an old blue print and design of Rover. The other British brand MG was sold to Nanjing Automobile and Industrial Corporation (NAIC) and was merged with SAIC in 2006. Based completely on MG's engine designs, SAIC produced two new models and renamed them 'MG7' and 'MG3' using SAIC's logo in 2008. The other two state-protected automobile companies GAIG and BAIC have developed no models of their own and have maintained their productions through their JV operations with foreign partners for almost three decades since the mid-1980s. One exception was DMC who produced a new model 'Jingyi' in 2007, but adopted the engine 4G93D4 and the corresponding transmission that were provided by Mitsubishi Motors's affiliated engine factory in China.²¹⁰

The Big Three and Small Three (or Small Two after FAW merged Tianjin Xiali) benefited from government protection in finance and controlled corporate purchase ever

²¹⁰ ANON. Renmin Wang, 2007, 'Fengxing Jingyi Jingjin Zizhu Pinpai, Waiguo Zhuanjia Toulou Jishu Tianji, 风行景逸精进自主品牌, 外国专家透露“技术天机” (Popular Car Model 'Jingyi' Emerged as Self-developed Brand - Foreign Expert Discloses Technology Secret)', <<http://auto.people.com.cn/GB/14555/5691674.html>>, accessed 15 June 2009.

since China opened its doors to automobile imports at the beginning of the 1980s. In the meantime they have indulged in easy means of expansion by taking advantage of their foreign partners' goodwill in marketing and technology. They have not endeavoured to develop their own intellectual properties and build up their own technology, especially in engine department to produce their own vehicles. Under public pressure for self-developed national brands and models, they took an easy route through the acquisition of bankrupt foreign automakers. As shown in Table 4.10, from 2006 to 2008, all have produced their own models with foreign engines, like FAW did, or like SAIC and DMC, adopted foreign engine technologies. Even Tianjin Xiali still used the outdated engine, 8A, which Xiali took over from Japan's Daihatsu to produce its model 'Vios'.

Both Geely and Chery's business history is impressive in their quick growth, entrepreneurship, and ability to cope with difficulties found only in China's economic environment. They survived the primitive market where high-end but optional technology was not immediately required. They have served the customers with models with basics such as air-conditioning, electric windows and power steering, and on the more expensive models even provided latest electronic gadgets such as CD players, Global Positioning System (GPS), and satellite radios. However, in the area of safety, they were behind the MNCs in material selection, transmission, airbag sensors, tyre pressure gauge sensors, and anti-lock braking system parts. The Chinese indigenous vehicle factories learned how to build multiple models on a single platform. Both Geely and Chery could only put in the same engine and by adjusting the length of the body, adding seats or changing door numbers could give a different name to the car. It is within

such a context that the competitive environment the indigenous automakers inhabited developed, which will be the subject of the next chapter, Chapter 5.

Chapter 5: Competition between Indigenous Chinese Automakers, 1997-2007

This chapter first focuses on three indigenous companies that emerged in the same period as Geely and Chery when the Chinese government relaxed its automobile policy and encouraged private firms and provincial enterprises to engage in the auto sector. Each company has a unique character, and expanded in its own territory and market with its own resources. Unlike Chery which received substantial loans from the Anhui provincial government, these companies managed to obtain funding from financial markets. However, they were far from being competitors of the Big Three and the Small Three's JVs in terms of sales and production and yet they are within the top ten indigenous automakers in sales and production, following closely on the heels of Chery and Geely in the race to build cars. They are introduced in this chapter as a partial representation of the wider Chinese indigenous automobile industry; before I go on to consider mergers in this sector and how Chery and Geely fit into the wider indigenous context.

5.1 BYD's transformation from battery maker to auto maker

Geely and Chery are not the only companies in the Chinese indigenous auto industry which have been aggressive and flourishing. BYD's legacy is a study in contrast to other automakers that focused on the automobile sector. It was originally established in 1995 in Zhejiang Province as a battery company which supplied its nickel-cadmium battery products to the electronic and telecommunication industries. In the beginning, it had no

direct relationship whatsoever with the building of cars. A provincially-owned company, Qinchuan Automobile Company, was originally formed in March 1997 by merging with the Xian Beifang Qinchuan Machinery Factory, a weaponry production firm and Shanxi Provincial Investment Group, a local government enterprise. The amalgamation of the two firms gave the new company the ability to produce a micro compact model, the 'Flyer', with an old 0.8 litre Suzuki engine. It suffered a great loss in 2001 despite sales revenue of approximately 231 million RMB (US\$34 million) and started to look for a new buyer.²¹¹ In 2003, Xian Qinchuan Automobile Company was bought off by BYD.

Like Yin from Chery, BYD's CEO Wang Chuanfu was born in rural Anhui Province. He was the son of a farmer. Through his hard work and study, he entered Zhong Nan Gong Ye University's Mineral and Material Science Department and became an academic rather than an industrialist. As the mobile phone became popular in the 1990s, rechargeable batteries were in great demand. Wang Chuanfu graduated as a physical chemist and became the head of a regional battery company; he soon dared to leave the government position and started his own private firm. With financial support from his cousin Lv Xiangyang, he formed BYD to produce rechargeable batteries in 1995.²¹²

²¹¹ ANON. Zhongguo Touzi Zixun Wang, 2008, 'Biyadi Zhangmenren Wang Chuanfu, 比亚迪掌门人王传福 (BYD President Wang Chuanfu)', <<http://www.ocn.com.cn/ebook/200811/wangchuanfu050949.htm>>, accessed 23 May 2009.

²¹² ANON., 2008, Mingren Wang 'Dianchi Dawang Chenggong Maoxian Chuang Daye, 电池大王成功冒险创大业 (Rechargeable Battery Giant Risks New Venture)', <<http://www.mr699.cn/story/html/18700.html>>, accessed 15 October 2008.

As with many entrepreneurs in China, Wang Chuanfu took advantage of the booming economy during the late 1990s and early of 2000, building a battery empire that supplied some of the largest mobile phone companies such as Motorola, Nokia, Sony-Ericsson, and TCL. Claiming to be the world's primary supplier of nickel-cadmium, nickel-hydrogen and lithium batteries, Wang Chuanfu took his company to the Hong Kong Stock Exchange (HKSE) and traded it publicly. With the expansion of telecommunications, especially in the area of mobile phones, BYD's performance was outstanding and profits were accumulated for other areas of investment.

Wang Chuanfu did not even know how to drive before he contemplated the idea of entering the car building business, a business of high investment and slow returns. Witnessing the surge in oil prices and fast evolutionary pace of a new automotive technology, and with a particular interest in the hybrid engine that was just being developed in automotive engineering, he decided to use BYD's technological advantage in the car industry. With the mastering of rechargeable battery technology, Wang Chuanfu thought his company could move towards becoming an alternative clean energy provider in the automotive industry. Under China's eleventh Five-year State Economic Plan (2006-2010), energy consumption and carbon emissions must be reduced by 20 percent and 10 percent respectively by 2010; this guideline was further followed and supported by a government subsidy policy in 2009.²¹³ This gave Wang Chuanfu the idea

²¹³ Minister of Science and Technology Minister of Finance, (2009) 'Jieneng yu Xinnengyuan Qiche Shifan Tuiguang Caizheng Buzhu Zijing Guanli Zanzheng Banfa, 节能与新能源汽车示范推广财政资金管理暂行办法 (Promotion of the Development of Energy Saving and New Energy Source Vehicles in Selected Experimental Cities)' <http://jjs.mof.gov.cn/jinjjianshesi/zhengwuxinxi/zhengcefagui/200902/t20090205_111617.html> Memorandum Caijian 2009-6. (23 January 2008.) In this memorandum it stipulates that each vehicle which uses new and alternative energy sources and saves oil by more than 40% will receive 50,000

to make cars utilising the rechargeable battery as the sole power source for an electric vehicle, or to adopt the electric motor with the combustion engine for a hybrid vehicle, both of which would be challenging and rewarding projects. BYD needed a platform to assemble cars, but Wang Chuanfu never thought of a JV with foreign companies. In one of his interviews with the press, he argued that China's domestic competition had been globalised and that the 50/50 structure created internal friction, and was a cul-de-sac for domestic factories.²¹⁴ When asked whether BYD needed more equipment or machinery for his Qinchuan factory, he stressed that BYD's battery manufacturing had employed almost 20,000 staff for a daily manufacturing capacity of 300,000 batteries: he would be "crazy to purchase robot machines for his car factory based on a daily output of a few hundred vehicles."²¹⁵

In January 2003, BYD bought Qinchuan Automobile Company for RMB 296 million (approximately US\$37 million), part of the surplus BYD had made from the battery business.²¹⁶ Wang Chuanfu considered these funds as a golden opportunity to be involved in the automotive world because the permit to build cars was difficult to obtain,

RMB of subsidy from the government. Ministry of Science and Technology Ministry of Finance, (2009) 'Jieneng yu Xinnengyuan Qiche Shifan Tuiguang Caizheng Buzhu Zijing Guanli Zanxing Banfa, 节能与新能源汽车示范推广财政资金管理暂行办法 (Promotion of the Development of Energy Saving and New Energy Source Vehicles in Selected Experimental Cities)' <http://jjs.mof.gov.cn/jinijianshesi/zhengwuxinxi/zhengcefagui/200902/t20090205_111617.html> 25 May 09 accessed 25 May 2009.

²¹⁴ Jia, Ke, *Zhongguo Qiche Diaocha, 中国汽车调查, (Investigation of Chinese Automobiles)*. Page 281.

²¹⁵ *Ibid.*, Page 283.

²¹⁶ ANON. *Zhongguo Touzi Zixun Wang*, 'Biyadi Zhangmenren Wang Chuanfu, 比亚迪掌门人王传福 (BYD President Wang Chuanfu)', ANON. *Xinlang Caijing*, 2004, 'Wang Chuanfu Jianjie, 王传福简介, (Brief Introduction of Wang Chuanfu)', <<http://finance.sina.com.cn/wealthperson/2004-04-21/116.html>>, accessed 15 June 2009.

and the entry requirement as stipulated in the 2004 revised automobile policy. With the acquisition of the financially poor Qinchuan Automobile Company, BYD's stock fell rapidly. The SARS epidemic in China in 2003 was also having its negative impact on car sales in Guangzhou at that time,²¹⁷ including BYD which just began building its automobile plant so this was a difficult time. Nevertheless, BYD adopted Mitsubishi's engine 4G18 in its debut model 'F3' in April 2005,²¹⁸ and once again greater demand for cars in the growing Chinese economy helped BYD in its sales with impressive records in 2006. Although BYD displayed in the 2004 automotive trade show with the models 'ET', 'F3e', and 'Hybrid-S' and claimed that its battery technology could be applied to hybrid and electric vehicles, it did not produce any vehicles with this technology. As illustrated in Figure 5.1, BYD's production increased in 2006, with its highest production 60,135 units, a big increase over the previous year. Again, the production in 2007 was 107,410, a huge 78.6 percent increase over 2006. Its revenue generated from the sales in 2007 improved by approximately 7.3 times of the amount of 2005.

²¹⁷ Jinrong Jie Wang Wang Weidong, 2009, 'Feidian Dui Woguo Qiche Shichang de Yingxiang,"非典"对我国汽车市场的影响,(The Impact of SARS on China's Automobile Sales)', <<http://auto.ifeng.com/focus/hottopic/20090430/33523.shtml>>, accessed 7 July 2009.

²¹⁸ Interview # 3, BYD Shenzhen, November 2007 .

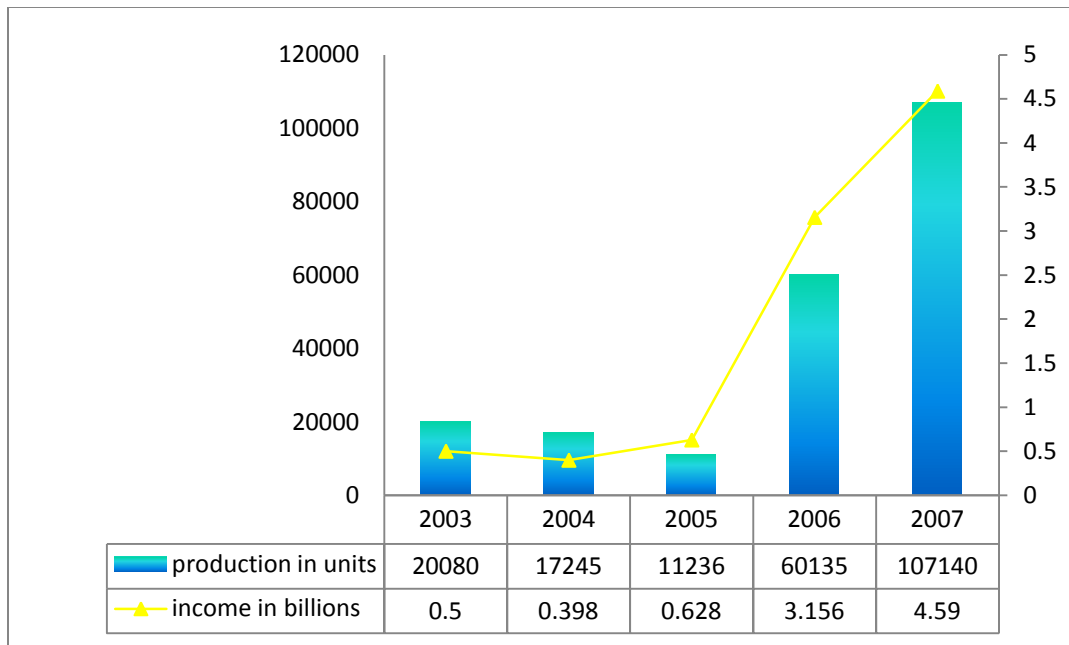


Figure 5. 1. Production and revenue of BYD, 2003-2007²¹⁹

Intending to become the second privately-owned automobile company in China after Geely, BYD took on more challenges by separating its automobile venture from the battery business and listing each on the stock market separately. In December 2007, BYD amassed approximately 600 million RMB (US\$85 million) from the financial market, which galvanised its determination to stay in the automotive industry and to develop a revolutionary electric vehicle.²²⁰ In the same period, there were another five private companies, which also raised capital through the stock market and entered the

²¹⁹ Zhongguo Qiche Nianjian, 2004-2008, (China Automotive Industry Yearbook 2004-2008), 2003 figure, 2004 Page 407; 2004 figure, 2005, Page 480; 2005 figure 2006, Page 506; 2006 figure, 2007, Pages 450,473,478; 2007 figure, 2008, Pages 477, 500, 505.

²²⁰ ANON., 2007, '2007 Biyadi Gufen Youxian Gongsi Niandu Caiwu Baogao, 2007 比亚迪股份有限公司年度财务报告 (2007 Financial Report of BYD Company Limited)', <<http://www.cninfo.com.cn/finalpage/2008-03-25/38261397.PDF>>, accessed 27 May 2009.

car- making business, but these soon failed.²²¹ However, the signs are that BYD will go from strength-to-strength. In 2008, the American venture capitalist Warren Buffet and his firm Berkshire Hathaway invested approximately HK\$ 1.8 billion (US\$250 million) and bought 10 percent of BYD's stock, which boosted its confidence in building a vehicle using alternative energy sources.²²²

5.2 BCA: Playing the financier

Brilliance China Auto (BCA) was reorganised in 2003 as a partner in a JV with BMW of Germany, which produced BMW's popular 3 and 5 series in Shenyang of Heilongjiang Province. However, the company's ownership status between 1991 and 2002 had been confusing and intriguing. Whether arguably considered as privately- or state-owned, BAC had gone through a dramatic and scandalous period despite the fact that it was publicly traded on the Hong Kong and Shenzhen stock markets consecutively. It went further, being listed on the New York Stock Exchange (NYSE), the first instance ever attempted by a Chinese automobile company. For this achievement, its CEO, Yang Rong, was highly praised and encouraged by the General Secretary of the Chinese

²²¹ Interview # 3, BYD The five companies were Aux, Amoi, Mide, Bird Groug and Greenkel.

²²² ANON., 2008, 'Bafeite 18 Yi Rugu Biyadi, 巴菲特 18 亿入股比亚迪 (Warren Buffet Bought in BYD with 1.8 Billion RMB)', <<http://finance.sina.com.cn/stock/hkstock/ggscyd/20080927/12145350510.shtml>>, accessed 24 May 2009. ANON. Zhongguo Touzi Zixun Wang, 'Biyadi Zhangmenren Wang Chuanfu, 比亚迪掌门人王传福 (BYD President Wang Chuanfu)', accessed 23 May 2009.

Communist Party Jiang Zemin.²²³ However, by 2002 it had become a failure, and its stock came off the NYSE. Many investors and its management team were surprised by its sudden fall, but could not do anything to save it. In 2003, the company was seized by the government as a primary creditor and authorised to seek a new partner, finally being forced to sell 50 percent of its stock to Germany's BMW as the partner of a multinational JV.

The story began with an opportunist named Yang Rong, holder of a doctorate in finance and economics from Xinan University of Sichuan Province, who successfully entered the merger and acquisition business and became involved in the production of micro vans. In 1991, he registered a company in Bermuda called Huabo Holding. Through an influx of capital, Huabo Holding bought a big stake (40 percent) in Shen-yang Jin-bei Vehicle Company (SYJBV), a small modification car factory owned by the Liaoning provincial government. Becoming its managing director in July 1992, he immediately registered the company with the Shanghai Stock Exchange to be publicly traded with the intention of acquiring capital for his next move.

At the same time, Yang Rong used his Huabo Holding Company to start a JV with SYJBV, calling it Shenyang Jinbei Passenger Car Manufacturing Company (SYJPC). By exchanging shares between SYJBV and Huabo Holding, BCA, an affiliated company of Huabo Holding, obtained 11 percent of SYJPC's shares, in addition to the 40 percent owned by Huabo Holding, giving BCA 51 percent and control over SYJPC. He started

²²³ Wang, Xueren, *Jianzheng Qingbai - Yang Rong Shishou Huachen Zhenxiang*, 见证清白- 仰融失守华晨真相, (Witness the Truth - How Yang Rong Lost BCA (Hong Kong: Xianggong Yuheng Chuangxun Guoji Youxian Gongsu Chubans, 2004). Pages 238-9.

another non-profit organisation called Zhongguo Jinrong Fazhan Jijin Hui (China Finance and Education Development Foundation, CFEDF), in which the People's Bank of China, the Financial and Monetary Institute, and the Chinese Bank Trust and Investment Group participated as the major shareholders. With SYJPC, in which Huabo Holding was the major shareholder, and with CFEDF, Yang Rong smoothly introduced and traded BCA on the NYSE. The stock had a huge market-cap-to-revenue ratio, but it seemed to have rather mesmerised investors who placed a lot of faith in the future growth of the Chinese automobile industry. In October 1992, BCA sold 5 million shares on the NYSE and accumulated US\$80 million, which front page news in the Chinese financial and automotive industry.²²⁴ Figure 5.2 illustrates the route Yang Rong went through to bring BCA into public ownership, i.e. starting from SYJBV to SYJPC, from SYJPC to BCA and through Yang Rong's Huabo Holding and CFEDF to take control of BCA. BCA's manufacturing production and capacity was on the rise between 1997 and 2003 when it became a publicly-listed company. Afterwards, its production declined, in contrast to Geely and Chery during the period 2004 to 2007. Its primary sales of the micro van model 'Jinbei' reached their peak in 2003 at 74,498 units, and declined from 2004 onwards, as indicated in Figure 5.3.

²²⁴ Huashang Bao (Chinese Businessmen Daily) ANON., 2002, 'Neidi Sanhao Fuhao Yangrong de Ziben K Xian,内地三号富豪仰融的资本 K 线 (The Third Richest Capitalist Yang Rong and His Capital Flow)', <<http://news.sohu.com/75/20/news203852075.shtml>>, accessed 10 October 2008.

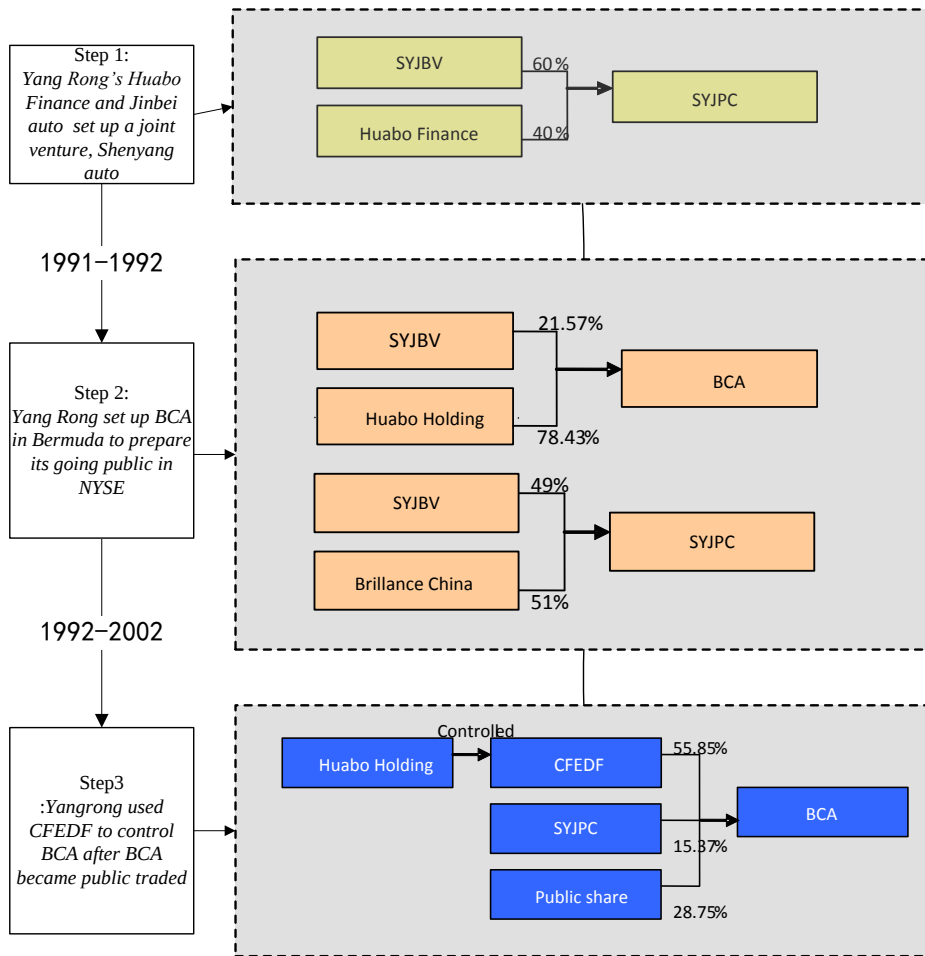


Figure 5. 2. BCA's capital manoeuvring before going public²²⁵

²²⁵ The author of thesis made Figure 57, based on the data from Anon., 29 December 2006, Baidu Baike, 'Yangrong An', ANON., 2006, 'Yangrong An, 仰融案 (The Case of Yang Rong)', <<http://baike.baidu.com/view/690444.htm>>, accessed 17 May 2009.

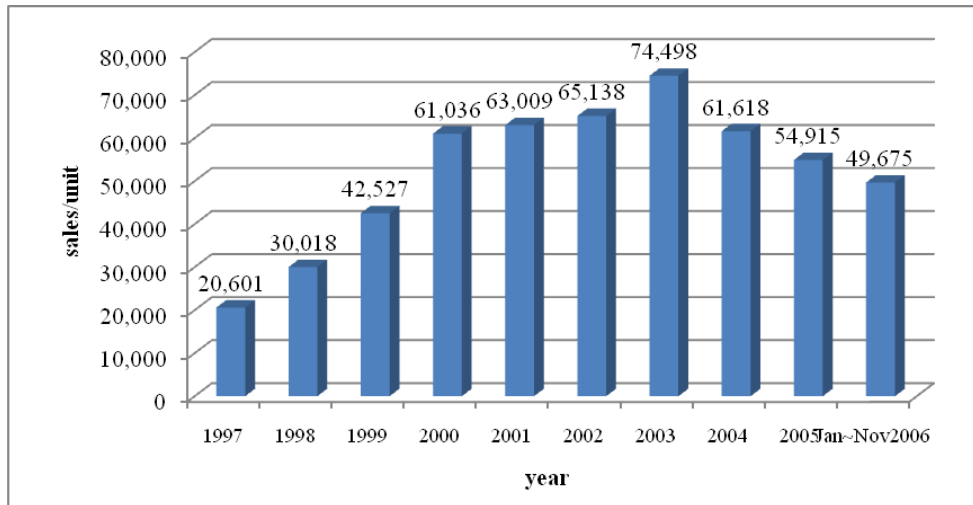


Figure 5. 3. Total sales of the Jinbei micro-van, 1997-2006²²⁶

As the chairman and CEO of BCA, Yang Rong did not spend his time managing car production. The ‘Jinbei’ sold very well in Northern provinces and generated substantial revenue for BCA until 2003, but became less popular as competition emerged from other automakers in the 2000s. BCA’s poor management failed to produce more models, losing the ability to attract public capital and provide earning potential for investors from the NYSE, the company run into difficulties. Yang Rong also exchanged and traded shares among the two public listed companies he had created in Hong Kong and

²²⁶ For the 1997-2000 figures: ANON. Zhongguo Qiche Zixun Wang, (2006) Huachen Jinbei Qiche Youxian Gongs, 华晨金杯汽车有限公司 (Shenyang Jinbei Passenger Car Manufacturing Company), <<http://www.auto-china.cn/cqzx.asp?id=&page=2>>, accessed 16 June 2009; For 2001 figure: ANON. Zhonghua Shangwu Wang, 2002, 'Huangshi Lu Zhudao Guangzhou Qingkeche Chuang Quanguo Xiaoliang Zhiliang, 黄石路主导广州轻客市场创全国销量之量, (Huangshi Lu Leads the Sales of Micro Vans in the Country)', <<http://www.chinaccm.com/06/0602/060204/news/20020628/141004.asp>>, accessed 16 June 2009; For 2002-2006 figure: Guojia Xinxi Zhongxin (National Information Center) and Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2007 中国汽车市场展望 (China Automotive Market Outlook 2007)*. Page 150.

Shanghai in 1999 and 2000, claiming to invest 500 million RMB (approximately US\$66 million) in BCA to design its first passenger car, he subcontracted various international companies for components and assembly lines to build the first passenger car model 'Zhong Hua' (China).

BCA's early period from 1991 through to 2002 was the story of a daring opportunist who tried to create an auto company using state resources and public funding from the stock market, and more ambitiously to take control of the company. With a series of share exchanges and public trading, BCA did accumulate substantial capital, which was partially used for constructing the factory and partially fell to individual purses. As the government discovered Yang Rong's scheme and issued an order for his arrest, Yang fled to the United States in May 2002 and left BCA in a management crisis. The Liaoning Provincial government claimed that the non-profit CFEDF owned 39.4 percent of BCA, public investors owned 56.9 percent, and Yang Rong and his management team only owned 3.7 percent. The Chinese government asserted that Yang Rong was just an operator on behalf of the government and not the sole owner and dismissed Yang Rong from the chairmanship for his wrong-doings. In an interview with the media in New York, Yang Rong argued that he was persecuted by the Chinese government and unsuccessfully filed a series of civil lawsuits respectively in Beijing, Bermuda, the District of Columbia and New York City against the Liaoning provincial government.

However, in the documentation presented to the NYSE, Yang Rong declared that Huabo Holding 'donated' its holding shares in BCA to CFEDF. So BCA's properties were either the non-profit organisation or an SOE's. Yang Rong had secretly formed a

company in March 1998 in Zhuhai, Hainan Province in South China, called Zhu Hai Huabo Holding Company, and took control of CFEDF.²²⁷ One year later Yang Rong deployed his scam, buying into another publicly-listed but poorly performing company in Shanghai, called the Dian Hua Enterprise, with the capital he accumulated from trading on the NYSE. Becoming its chairman, he renamed it 'Shanghai Huachen Automobile Company'. After rebranding the firm, he took the new company to the HKSE and acquired new sources of capital. In 2001, Yang Rong was named the third richest man in China by Forbes Magazine with a fortune estimated at US\$840 million.²²⁸

Yang Rong's scheme was finally detected by the Chinese central government, which in March 2002 re-delegated Huachen's assets to Liaoning Province and appointed new management to replace him. Two months later, the re-formed Huachen spent US\$18 million in the market to buy the outstanding shares of CFEDF, purchasing them under new management to eliminate any ambiguous private factors in BCA. The Liaoning government immediately took legal action by issuing an order for Yang Rong's arrest on the charges of fraud and forgery and denounced his multiple positions in various companies that were listed on the NYSE, HKSE, and Shanghai Stock Exchange. Refusing to go back to China for fear of arrest, Yang Rong sought political asylum and has stayed in the USA since 2002. In 2003, as the scandal and financial fiasco ended, BCA's ownership returned to the provincial government which entered an agreement with Germany's BMW by contracting BMW's 3 and 5 series engines to produce

²²⁷ ANON., 'Neidi Sanhao Fuhao Yangrong de Ziben K Xian,内地三号富豪仰融的资本 K 线 (The Third Richest Capitalist Yang Rong and His Capital Flow)' <<http://news.sohu.com/75/20/news203852075.shtml>> accessed 10 October 2008.

²²⁸ *Ibid.*

passenger cars. In July 2007, BCA's board decided to withdraw BCA stock from the NYSE due to its non-productive performance. The case of BCA illustrates that an individual could play in the 'grey area' between government assets and the financial market by using the Chinese automobile industry as a cover for personal gain.²²⁹ The production of BCA in the early 2000s showed a growth parallel with the emerging Chinese economy, but its focus on financial manoeuvring rather than reinforcing the foundation of the automobile manufacturing under BCA led to its downfall.²³⁰

5.3 Great Wall Motors: Working on the secondary market:

*... 'I will not produce the higher profit passenger vehicles. Great Wall does not have to be a large manufacturer, but instead, focus on something we are good at and be the best. When we are good at what we are doing, we would be like a hammer in the cotton bales...'*²³¹

It is hard to relate Wei Jianjun, originally a farmer, to the other new tycoons in the Chinese business world. Wei looks shy, and talks straightforwardly and bluntly as a typical northern Chinese character. By the age of 39, Wei had become the chairman of Great Wall Motors and one of the richest businessmen in China. He was born in Baoding,

²²⁹ Wu, Xiaobo, *Da Bai Ju*, 大败局 (*Big Failures*) (4th edn.; Hangzhou: Zhejiang Renmin Chubanshe, 2008). Pages 115-124.

²³⁰ *Ibid.*, Page 3.

²³¹ Anon. Shijie Qiyejia, 2009, 'Changcheng Qiche Dongshizhang Wei Jianjun: Changcheng Yaozuo Jinzhi Qiye, 长城汽车董事长魏建军: 长城要做精致型企业 (Great Wall Motors Chairman Wei Jianjun: Great Wall Must Be a Specialty Producer)', <<http://biz.bosslines.com/?action-viewnews-itemid-10978>>, accessed 15 June 2009.

Hebei Province, a deprived area in central China, where the car was an expensive luxury item, and trucks were used to transport people and cargo. With a population of over 10 million people and largest city in Hebei Province, Baoding was considered one of the three most important economic development zones in the Northern triangle along with Beijing and Tianjin. Less developed than Tianjin, Baoding had historically served Beijing from the south as the main supplier for all the necessities of the capital.

Wei started his career as a worker in a water pump factory which supplied products to Great Wall, then a popular car modification and assembly factory which purchased component modules from many sources. After making some modifications by hand, Great Wall produced basic vehicles such as micro vans and military equipment. In 1990, when Great Wall was in debt and left with a handful of jobless employees, Wei seized the opportunity to gain control of Great Wall Motors by leasing the operating rights including the assets, debts and financial liability from the Nandayuan district government. Between 1991 and 1995 there were only two small companies that produced mini-pickups and the quality of these was mediocre. Upon returning from an educational trip overseas, Wei decided to select the mini-pickup as the primary vehicle for Great Wall. This decision was considered high risk because the mini-pickup was banned from major cities such as Beijing, Shanghai, and Tianjin. Being a low profile figure, Wei secretly started to build mini-trucks with components from other factories and used the '491' engine from Sichuan Mianyang, a Toyota JV in China, and later the '4G64' engine from Shenyang Aviation Mitsubishi Enterprise, Mitsubishi's JV in north-eastern China. The vehicle was roughly made and its body parts in many instances were not tooled for standard stamping but for handcraft production.

Even though his business began with very little media attention, Wei managed to focus his production on the improvement of the truck and SUV. He avoided the passenger car sector, which he thought to be too competitive and not in demand in Hebei Province. Within six years of having the Great Wall factory under his control, the first self-developed truck model 'Deer' was off the assembly line. This mid-priced mini-truck (approximately 75,000 RMB) was positioned to fit into the range between the high-end Suzuki vehicles which sold for over 170,000 RMB and the low-end modified trucks such as the Futian models which sold for less than 40,000 RMB. At the end of 1998, the 'Deer' model became extremely popular, ranking number one in national truck sales.²³² The key factor to Great Wall's success was the empty market, as no other factories were competing in the area of the mini-truck, focusing instead on passenger and sub-compact vehicles.

While the mini-truck was selling very well in coastal provinces such as Zhejiang and Guangzhou, Wei ran into the critical issue of ownership in Great Wall Motors. The operating rights in Great Wall were 'leased' rather than 'sold' to Wei, and the regional government still legally owned Great Wall. In exchange for Wei Jianjun's hard work and dedication, Nandayuan district government transferred 21 percent of its shares to Wei for 8 million RMB, plus 25 percent of 'bonus' shares for his operating efforts. Thus Wei received 46 percent of the ownership in Great Wall and became the largest shareholder in the company. It was not known how Wei as an individual obtained the capital of 8 million RMB, a secret that remains to be discovered. To create capital for production and

²³² *Ibid.*

development, In 2000 Great Wall was listed on the HKSE, which resulted in a great gain. The oversubscription of Great Wall shares in the financial market reached 682 times its assets, and brought 7,800 million RMB (approximately US\$114 million) to Great Wall in its capital stock. To the great surprise of his family and friends in Baoding, Wei had individually become one the richest automobile industry tycoon in China in an amazingly short period of time.²³³

The capitalisation of Great Wall in Hong Kong gave it the strength to build a factory that was up to world standards and had modern equipment. Between 2000 and 2003, Great Wall established a factory for combustion engines, an industrial park with 100,000 units of capacity, and an automotive R&D centre.²³⁴ Not long after, Great Wall started to launch the models 'Safe' and 'CUV' (City Utility Vehicle), which dominated sales in the utility vehicle category for the nine consecutive years between 1997 and 2006. In 2006 Great Wall began to export its 'CUV' to Italy, establishing a marketing base in the European Union, which encouraged Great Wall's plans to build an MPV and passenger vehicles. Wasting no time, in 2007 the second phase of the factory, with an additional 100,000 units of capacity, was put into operation.

Within less than fifteen years, Great Wall converted its district 'xiang' (township) business to a successful provincial enterprise without help from the central government and was listed on the HKSE. With technology borrowed from Japan's Toyota and

²³³ *Ibid.*

²³⁴ Changcheng Qiche Hui Lian wang, Official Great Wall Motors web link, 19 May 2003, ANON., 2003, 'Changcheng Qiche Fazhan Licheng, 长城汽车发展历程 (Chronological Events of the Great Wall Motors)', <<http://www.gwm.com.cn/html/about/history.asp>>, accessed 15 May 2009.

Mitsubishi, components from existing parts suppliers and capital from the financial market, Wei Jianjun took advantage of the opportunity and accumulated fortunes for both himself and the company. Great Wall had been slow in developing its own engine and had to rely on Germany's Bosch and Japan's Mitsubishi Motor companies for their core technology in both diesel and combustion engines.²³⁵ Its products were not accepted in the major cities but were in great demand in rural areas, and it successfully upgraded the mini-pickup range with the new categories of SUV and MPV.

5.4 Inevitable mergers and acquisitions

Similar to the way in which the American Big Three acquired smaller companies through mergers in the 1940s, the Chinese Big Three started to acquire smaller automakers in the 1990s and 2000s. Many companies operated their businesses inefficiently and faced merger and fusion with the stronger state businesses. Table 5.1 below shows the major mergers that occurred in the Chinese auto industry between 1995 and 2007. In that time, eleven companies were taken over or were approached by the Chinese Big Three or their JVs, but only two companies by Chery and BYD. The Big Three's merger activities also extended overseas and, in 2004 and 2005, two foreign automakers, the Korean SsangYang Motors and the British Rover Group were bought by SAIC and NAIC respectively. SAIC bought the blueprints of an engine from MG Rover Group earlier in 2004, but did not buy the factory facilities. NAIC bought the British MG Rover Group for its technology and factory equipment in 2005. Under the coordinating effort of the

²³⁵ Interview # 4, Great Wall Baoding, Hebei, September 2007

government NAIC was merged with SAIC two years later in 2007 to avoid competition and the duplicate production of MG Rover in China.

Table 5. 1. Merger and acquisition of Chinese automobile companies, 1995-2007²³⁶

No.	Merger and acquisition party	The company being merged with	Year
1	FAW	Shenyang Jinbei Automotive Co.,Ltd.	1995
2	FAW	Hainan Automotive Co.,Ltd.	1998
3	SAIC	Jiangsu Yizheng Auto Manufacture	1999
4	SAIC	SAIC Yizheng Automotive Co.,Ltd.	2000
5	FAW	Tianjin Automotive Industry Corporation	2002
6	FAW	Sichuan Minibus Manufacture	2002
7	SAIC	Shandong Yantai Automobile Body	2002
8	BYD Company Limited	Xi'an Qinchuan Automotive Co.,Ltd.	2003
9	Chana Automobile Group Corporation Limited	Nanjing Jinwa Automotive Co.,Ltd.	2004
10	SAIC	SsangYang Motor Company (Korean)	2004
11	DMC	Zhengzhou Nissan Motor Co., Ltd.	2005
12	Shanghai General Motor Wuling Automotive	Qingdao Yizhong Transportation &	2005
13	NAIC	Rover (British)	2005
14	Chery Automotive Co.,Ltd.	FAW-Yangzi Automotive Co.,Ltd.	2006
15	SAIC	Nanjing Automobile Industry Group Co., Ltd.	2007

²³⁶ For Shenyang Jinbei Automotive Co.,Ltd., : Jingji Cankao Bao (Economics News) 13 December 2002, Zhongguo Wang (China.com.cn), ANON., 2002, 'Yiqi Shougou Huachen, 一汽收购华晨 (FAW Offered to Take Over SYJBV)', <<http://www.china.com.cn/chinese/jingji/246304.htm>>, accessed 1 June 2009. For Hainan Automotive: Baidu Baike, 6 November 2006, ANON., 2006, 'Yiqi Hainan Qiche

The government automobile industry policy in 1994 clearly supported the consolidation of various smaller automobile factories and focused on the development of the Big Three,

Youxian Gongsì, 一汽海南汽车有限公司 (FAW Hainan Automotive Co.)', <<http://baike.baidu.com/view/189483.htm>>, accessed 1 June 2009. For Jiangsu Yizheng Auto Manufacture: Zhongguo qiche jiaoyi wang (China Auto Trade Networking), 16 June 2003, ANON., 2003, 'Shangqi Shougou Yizheng Qiche, 上汽收购仪征汽车 (SAIC Merged with Yizheng Automobile)', <http://www.auto18.com/news/html/2003-06-16/news_200306163383.html>, accessed 1 June 2009. For Tianjin Automotive, Zhongguo Zengjuan Bao (China Securities Interactive), 8 May 2002, ANON., 'Yiqi Shougou Huachen, 一汽收购华晨 (FAW Offered to Take Over SYJBV)', accessed 1 June 2009. For Sichuan Minibus Manufacture: Zhongguo Keche wang, ChinaBuses.com, Cao Chaoxia November 2002, ANON., 2002, 'Yiqi Jituan yu Sichuan Lvxing Zhizao Chang Chongzu, 一汽集团与四川旅行车制造厂重组 (FAW Group Merged with Sichuan Minibus Manufacturer)', <<http://www.chinabuses.com/membership/2002/11/18001.htm>>, accessed 1 June 2009. For Shandong Yentai: Zhongguo Qiche Jiaoyi Wang (China Auto Trade Networking), 20 December 2002, ANON., 2002, 'Yantai Chesheng Chang Bei Lianhe Shougou, 烟台车身厂被联合收购 (Yantai Automobile Jointly Emerged)', <<http://www.auto18.com/news/viewnews.php?id=15117>>, accessed 1 June 2009. For Xi'an Qinchuan: Zhonghua Shangwu Wang, 10 March 2003, ANON., 2003, 'Dianchi Dawang Shougou Qinchuan Qicheye de Biyadi Xianxiang, 电池大王收购秦川: 汽车业的比亚迪现象 (Story of Rechargeable Battery Giant BYD Merging with Qinchuan)', <<http://www.chinaccm.com/06/0604/060401/news/20030310/100135.asp>>, accessed 1 June 2009. For Nanjin Jinwa: Longhoo Wang (longhoo Net), 29 March 2003, ANON., 2003, 'Changan Qiche Shougou Jinwa, 长安汽车收购金蛙 (Changan Merged with Jinwa of Nanjing)', <<http://www.longhoo.net/big5/longhoo/news/finance/node93/userobject1ai47215.html>>, accessed 1 June 2009. For Ssang Yang Motors: Sina Caijing Zongheng (Sina Finance), 5 August 2003, Wang Liang, Liang Wang, 2003, 'Shangqi Haodu Hanguo Shuanglong, 上汽豪赌韩国双龙 (SAIC Gambling on Korea's Ssang Yang Motors)', <<http://finance.sina.com.cn/b/20040805/0959927319.shtml>>, accessed 1 June 2009. For Zhengzhou Nissan: Yifu Wang, 2 November 2004, ANON., 2004, 'Dongfeng yu Richan Hezuo Zaijin Yibu: Dongfeng Qiche Shougou Zhengzhou Richang 51% Guquan, 东风与日产合作再进一步: 东风汽车收购郑州日产 51% 股权 (Dongfeng Stepped up with Nissan: Dongfeng Merged with Zhengzhou-Nissan Motors by Taking Over 51%)', <<http://stock.eefoo.com/stock/zljm/dxjm/200411/02-655748.html>>, accessed 1 June 2009. For Qindao Yizhong: Jingji cankao bao (Economics News), 4 June 2005, ANON., 2005, 'Qingdao Yizhong bei Shangqi Tongyong Wuling Shougou, 青岛颐中被上汽通用五菱收购 (Qingdao Yizhong Merged with SAIC-GM-Wuling)', <<http://finance.sina.com.cn/chanjing/b/20050604/0858104897.shtml>>, accessed 1 June 2009. For British Rover: Sina Finance, 26 July 2005, ANON., 2005, 'Nanjing Qiche Jituan Chenggong Shougou Yingguo Luofu Qiche Gongsì, 南京汽车集团成功收购英国罗孚汽车公司 (NAIC Taking Over British Rover)', <<http://finance.sina.com.cn/roll/20050726/2102232059.shtml>>, accessed 1 June 2009. For FAW-Yangzi: Sina Finance, 26 Feb 2007, Guangzhou Ribao (Guangzhou Daily), ANON., 2007, 'Qirui Shougou Yiqi Yangzi Qiche, 奇瑞收购一汽扬子汽车 (Chery Merged with FAW-Yangzi Automobile)', <<http://finance.sina.com.cn/roll/20070226/06071229032.shtml>>, accessed 1 June 2009. For NAIC merger by SAIC: Dingdian Caijing, 28 December 2008, Minchu Wang, 2008, 'Shanghai Qiche: Shougou Nanqi Kanhao Gongsì Changyuan Fazhan, 上海汽车: 收购南汽看好公司长远发展 (SAIC Taking Over NAIC for Future Development)', <<http://www.topcj.com/html/2/SJDP/20071228/64976.shtml>>, accessed 1 June 2009.

and the effect of this has become obvious since 2000. As market shares have centralised in the few State Enterprises, private firms have also aggressively looked for opportunities to increase their influence by merging with even smaller factories. For instance, FAW-Yangzi, a division that duplicates FAW's own production model of the minivan, was sold to Chery in 2006 to add to Chery's production line. The consolidation of the car manufacturing companies has been reflected in the merger and consolidation of component suppliers, which previously were disintegrated, scattered in territory and small in scale. The economy of scale in the Chinese automobile industry is dependent on the relation between its production quantity and profit return. The manufacturing costs Chinese indigenous automakers faced were originally low, but they are continuing to rise. This had been a problem for the privately-owned firms such as Geely and Great Wall, but seemingly not so much for the state-owned car companies that have been backed by the Chinese government. The merger and acquisitions of various companies have reduced competition in the market, and the SOEs could always write off their debts even if they do not profit from business. This, in the end, makes it difficult for the privately-owned companies to compete with SOEs.

5.5 National champions and their followers

The Political Bureau of the Central Committee (Politburo) is China's top government decision-making group and in 2004, members paid a visit to Chery's factory at Wuhu, Anhui province. Impressed with the company's growth and modern manufacturing facilities, one of the three top officials, Li Changchun, known to be the fifth ranked member of the Politburo, remarked that "Chery must be taken care of at all costs, like

China's unique animal, the panda".²³⁷ No such comments were ever made about China's protected Big Three as none of them can be considered to be pure bred Chinese automakers because of their capital structure and adopted technology. As the Big Three still dominated China's market share and their co-operations with foreign companies remained solid and lasting, Li suggested ensuring the survival of provincial car companies such as Chery and nourishing their growth. Unofficially, Chery had replaced the antiquated national vehicle 'Hongqi', and had become a household name representing the autonomy of the Chinese car industry from foreign companies' influence.

Like Chery, Geely did not depend on MNCs subsidiaries for entry into automobile production and fought to become another national champion amongst China's indigenous auto factories. Section 4.2 of the previous chapter depicted the nature of Geely's capital structure, which relied on its financing through public trading of the company shares. Geely's entry into the market proved two points: first, that a privately-owned car company could become established in China like the state enterprises as long as there is the determination; and second, that passenger vehicles could also be made inexpensively provided that there is enough demand. Its breakthrough among foreign auto powers in China's market was difficult and lonely, but also encouraging. In the compact car categories, both Geely and Chery performed well as the binary stars, dominating China's market. They varied in their methods of building financial capital and in sourcing human resources, but faced the same competitive market. One is a self-starter which has evolved

²³⁷ Zhan, Xinyi, 2005, 'Li Changchun: Yao Xiang Baohu Daxiongmao Yiyang de Baohu Qirui, 李长春:要像保护大熊猫一样的保护奇瑞 (Li Changchun: Protect Chery like the Panda)', <<http://news.chinacars.com/news/cjdt/190642.shtml>><http://news.chinacars.com/news/cjdt/190642.shtml>>, accessed 24 May 2009.

from a humble manufacturer of refrigerators to a major car producer, overcoming many financial and market obstacles, while the other is a local provincial enterprise which has turned itself from a component factory and a relatively small car modification shop into a modern car manufacturer, prevailing over interferences that came from conflicts of interest against government protected enterprises such as SAIC. Both Geely and Chery entered the market in 1997 and produced high numbers of cars in the period between 2001 and 2007. Equally, they have shown unique growth paths and demonstrated initiative through developing their individual engine technology and forging their own brand names. As China joined the WTO, the two companies found an export market in the Middle East, Asia and Russia with similar rates of success, and became the first two indigenous Chinese auto factories to compete outside China. Each of them fought to dominate the microcars sector domestically and also to become the true representative as the producer of a Chinese national vehicle in the overseas marketplace.

One of the primary reasons Chery and Geely surpassed other auto companies such as BYD, BCA and Great Wall is because they had better control of engine technology, which they obtained through sub-contracting advanced engine specialty companies and through their own self-development rather than through the purchase of engine products from suppliers that were accessible in the Chinese market. When Chery and Geely first started their production they borrowed engine technology and bought the engine and transmission module from the Japanese for the core of their products. They soon found themselves competing with the same Japanese companies in JVs in China. In order to avoid rivalry against other companies' vehicles with the same specifications they had to possess the expertise to develop appropriate models for the market. As explained in

Section 4.3 of the previous chapter, Geely's self-developed CVVT engine production could not meet its demand for assembling cars between 2004 and 2007, and it had to rely on outsourcing up to approximately 50 percent of its engines from Mitsubishi Motors. Chery's situation was better; producing its ACTECO engines to cover most of its needs and only depending on outsourcing less than 12 percent. Details of how they accumulated the core engine technology among various component industries will be explained in sections 7.3 and 7.4. As for other auto companies such as those we have focussed on in this chapter, none of them had the ability to produce engines for their own models and they could only act as vehicle assemblers to design and build chassis and body panels around the engines they bought from the market. This resulted in their products being similar, monotonous and uncompetitive because they offered nothing innovative. The only exception was BYD's application of its battery technology into its hybrid model as part of its ongoing engine development, but by 2007 it had not developed any combustion engines that it used in its models.²³⁸

For the purpose of comparing the performance of each indigenous company, only the ten top Chinese indigenous automakers have been selected here. Small companies with annual production of less than 40,000 units are excluded because of their insignificant market share. In a quantitative comparison as illustrated in Table 5.2, Chery and Geely led other indigenous competitors in vehicle production and sales. Capital accumulation and factory investment are equally essential but are not compared here because these amounts have been constantly fluctuating over time and are difficult qualitatively assess.

²³⁸ Interview # 3, BYD

To evaluate Chinese indigenous companies' general performance, a comparison in various categories is necessary. Three important categories have been selected for assessment: engine development capacity, human resources investment and export capacity. As will be explained in Section 7.3 of Chapter 7, a vehicle's overall marketability and performance depends on the specification of its engine; each factory's capacity for engine development must be assessed as it reflects the potential and the power of each auto company. As for the human resources investment of the ten top Chinese indigenous companies, which will be discussed further in Section 7.5, a summary comparison is given in Table 5.2 below, and their export capacity is also presented for evaluation.

Table 5. 2. Comparison of various categories of the ten top Chinese indigenous auto companies²³⁹

Company name	Chery	Geely	Tianjin FAW	BCA	FAW Hainan	BYD	Great Wall	Changan	Changhe	Hafei
Sales and production ranking²⁴⁰	1	2	3	4	5	6	7	8	9	10
Engine development capacity	Yes	Yes	Yes	No	Yes	No	No	No	No	No
Human resources Investment	Yes	Yes	No	No	No	No	No	No	No	No

²³⁹ Interview # 1, Geely Interview # 2, Chery Interview # 5, FAW-Tianjin Tianjin, September 2007 , Interview # 6, BCA Shenyang, September 2007 Interview # 3, BYD , Interview # 4, Great Wall Interview # 9, Chongqing Changan Chongqing, March 2009 The author of this thesis compiled this table, based on the results of interviews.

²⁴⁰ Guojia Xinxi Zhongxin (National Information Center) and Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2008 中国汽车市场展望 (China Automotive Market Outlook 2008)*. Pages 360-361.

Export capacity	Yes	Yes	No	No	No	No	Yes	No	No	No
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As this table indicates, among the top ten domestic Chinese automakers only four companies have developed their own engine series. The companies that do not produce their own engine components bought them from Japan's Mitsubishi within China. Tianjin FAW, originally called Tianjin Xiali, bought an outdated engine factory from Japan's Daihatsu in the 1990s and produced vehicles with this bought engine until 2002 when Tianjin Xiali merged with FAW. After the merger, FAW started to adopt the more advanced engine CA4GB from its Japanese venture partner Toyota in order to make subcompacts replacing the market lost by the old Tianjin Xiali company. FAW-Hainan is a new outfit created in 1997 when FAW merged with the Chinese partnership in Hainan-Mazda (known as Haima), a Guangdong provincial and foreign JV. In 2006 Japan's Mazda sold their shares in Haima to FAW-Hainan and re-formed a new JV factory with FAW in Jilin Province, leaving FAW-Hainan to build vehicles independently with the borrowed engine CA7130 from Mazda. Though FAW owned the intellectual rights of their purchased engine in the Tianjin-FAW and FAW-Hainan factories, the engine's design and development were Japanese by birth and have not been improved or updated by FAW since the takeover. Lacking the support from the Chinese government that was extended to the Big Three state enterprises and their JVs, both Chery and Geely faced hurdles in building their core engine technology; having no foreign partners to depend on at all, this had to be carried out autonomously.

Due to the rapid growth of the Chinese automobile industry in the two and a half decades since 1984, the demand for diverse human resources increased accordingly but was not being met by supply. As will be explained in more detail in Section 7.5, each domestic factory faced a shortage of skilled technicians and professional managers, and inevitably people were headhunted from each of the different company's' workforces. Being in an inferior position when compared to the state auto enterprises, Geely and Chery subsequently established their institutions of automotive learning in 2001 and 2007 respectively. Geely was ahead of Chery in this category, building its first academy in Beijing to train the required personnel. It has enjoyed the fruits of its harvest, hiring 60 percent of its technicians from the graduates of Beijing Geely University, and training more than 30,000 people in seven years.²⁴¹ The other companies listed in the comparison table had not undertaken similar measures and therefore fell behind Geely and Chery in maintaining and training their workforces and manpower. In export, an area favoured and encouraged by the Chinese government, Chery has also been the forerunner since 2002 and has ranked as the auto company in China with the highest number of exported vehicles, with Geely and Great Wall following behind.

In a narrow sense, both Chery and Geely could be considered as China's champion indigenous automakers during the early 2000s in terms of sales and production. Though the entire indigenous automakers' sales and production captured less than 25 percent of the Chinese market, it signalled the efforts of the autonomous Chinese auto industry

²⁴¹ ANON. Jingji Ribao (Economic News), 2006, 'Zizhu Chuangxin Tuotai Xuangu Kan Jili, 自主创新 • 脱胎换骨看吉利 (Self-development and Innovation: the Re-born Geely)', <<http://www.geely.com/news/detail/22139.html>>, accessed 15 June 2009.

through the decade of between 1998 and 2007. Back in 2001, there was not even a single company of an indigenous nature that had made any impact. But at the end of 2007, out of the indigenous auto factory's 25 percent of market shares, Chery and Geely took 6.99 percent and 4.51 percent respectively, and left the other companies trailing at a distance. Aside from sales and production figures, the Chinese government seems to have favoured Chery, a provincial enterprise and asset, over Geely to become China's national champion by specifically honouring Chery in national events. For instance, when the Chinese space shuttle 'Shenzhou 7' returned to Mongolia on 28 September 2008 after a three-day trip, the three proud astronauts were seated in Chery's model 'Eastar Cross', and received a triumphant welcome. During the 2008 Beijing Olympics, Chery's hybrid model 'A5' was chosen as the only Chinese indigenous vehicle to transport international athletes, which greatly promoted its image. These government endorsements were further highlighted in 2008 by an objective survey, carried out by the international marketing and survey company, JD Power, which evaluated Chery as the number one Chinese indigenous auto company for customer satisfaction in the Chinese automotive market.

In comparison, Geely, in the semi-socialist and semi-capitalist political economy, gained its position by individual endeavour and, therefore, one could argue that it is truly the defender of the indigenous Chinese automobile industry, deserving national acknowledgement of its accomplishment. Geely's sales and production followed close behind those of Chery in the sector of indigenous auto factories, as did its export levels. Geely has acted like Chery's shadow, entering the same market and facing the same competition from the JVs since 1997. Focusing on the microcars market to avoid

confrontation with the Big Three and their JVs in the mid-engine vehicle sector, both Geely and Chery developed smaller engines for their auto production. In the media, Geely is constantly portrayed as being one step ahead of Chery (as explained in Section 4.2). At international automobile exhibitions Geely had always emphasised that its vehicles are genuinely made in China, which often raised controversy over the quality of the products. Many critics question whether it is wise to have Geely represent the indigenous Chinese auto production, as its quality issue might have a negative impact on other Chinese automakers. C-NCAP (China-New Car Assessment Programme) is an extension of the international NCAP, and is Chinese government sponsored. In 2006 C-NCAP gave Geely's popular class 'A' model the lowest ranking in collision and crash tests²⁴², discrediting its marketing claim that the quality of its vehicles was comparable with that of the imports. Improvements were made in the following two years and the rating was upgraded. In 2008, Geely changed its company's mission statement from 'making a national car that is affordable' to 'making a quality car that is affordable'. Moreover, in the same year Geely, presumably keen to amend its current image of selling only low-end products, offered 3.6 million RMB (approximately US\$500,000) to the public for proposing a new logo, replacing the original one that looked like Toyota's.

In China's automobile industry over the last five decades Chery and Geely, the two dark horses in the race, have grown in a unique political economy in which only a few daring

²⁴² The New Car Assessment Program originated from the US in the 1970s, and it became further recognised in developed countries such as Japan and those in Europe in the 1990s. A general feature of NCAP is that all the test cars have to be bought from the market by ordinary consumers. It is an independent test for the advantage of consumers, without intervention from automobile producers. ANON., 'The New Car Assessment Programme', <<http://www.c-ncap.org/content/pzjg/xxcyc.htm>>, accessed 18 September 2008.

entrepreneurs could survive. When the economic environment became more favourable and all eleven major global automakers built their JVs in China in the 2000s, the competition was just as harsh as that in the developed commercial regions. Up to 2007, these two indigenous automakers, Chery and Geely – one of which might consider itself to be the national champion of the Chinese auto industry while others might regard the other as such – led the race in the categories of the sales and production, engine development, and the training of human resources, as will be explained in Chapter 7. Before that, however, in Chapter 6, I will review the external factors, no less crucial in the development of the Chinese indigenous automobile industry, extending the contexts within which the sector can be seen.

Chapter 6: Review of External Factors

This chapter examines the three external factors that have affected the recent history (1995-2007) of the Chinese indigenous automobile industry. During the preceding three decades, the Chinese automobile industry developed under the planned economy and only state-enterprises, such as FAW and DMC, were manufacturing a limited number of trucks and military vehicles. The beginning of passenger car production in the 1990s induced the transition of state-enterprises into the 'Big Three' and 'Small Three', each engaged with foreign companies through JVs. This led to the loss of the domestic character of the industry. The indigenous automobile industry, however, emerged in the late 1990s and developed under a new progressive economic atmosphere. The key factors affecting its growth which I am going to focus on are: the increasing purchasing power of Chinese people; China's entry into the WTO; and the microcars market which the Chinese indigenous automobile industry focused on.

6.1 Income per capita and purchasing capacity

One of the external determinants of the growth of China's indigenous automobile industry is China's income per capita. To study the correlations between the growth of China's indigenous automobile industry and the increase of China's income per capita, I have made an analysis based on the data from the various editions of the China Automobile Industry Yearbook released between 1995 and 2006. The data relating to the total automobile sales and growth rate are inclusive of Chinese JVs and indigenous automakers; hence the findings will reflect the Chinese automobile industry as a whole, rather than the indigenous automakers alone. From the data shown in Table 6.1 below,

the figures of the growth rate of the population, income per capita, and Chinese auto sales during this period are selected for further examination and analysis.

Table 6.1. China's income per capita, population growth rate, automobile sales and automobile growth rate, 1995-2007²⁴³

Year	Total Population (year-end) (unit: thousands)	Population growth rate (%)	Income per capita (RMB/ person)	Income per capita growth rate (%)	GDP per capita (RMB/ person)	GDP per capita growth rate (%)	Total auto sales volume (unit: thousands)	Total auto sales volume growth rate (%)
1995	1,211,210	10.55	4938	—	5046	9.7	—	—
1996	1,223,890	10.42	5731	16.1	5846	8.9	—	—
1997	1,236,260	10.06	6281	9.6	6420	8.2	—	—
1998	1,247,610	9.14	6655	6.0	6796	6.8	1603.1	2.44
1999	1,257,860	8.18	7011	5.3	7159	6.7	1833.0	14.34
2000	1,267,430	7.58	7732	10.3	7858	7.6	2088.6	14.01
2001	1,276,270	6.95	8468	9.5	8622	7.5	2371.1	13.29
2002	1,284,530	6.45	9272	9.5	9398	8.4	3248.5	37.01
2003	1,292,270	6.01	10460	12.8	10542	9.3	4391.6	35.19
2004	1,299,880	5.87	12277	17.4	12336	9.4	5071.7	15.48

²⁴³ The author of this thesis has compiled this table, based on the information: *Zhongguo Jingji Nianjian*, 2008, (*Almanac of China's Economy*, 2008), Beijing, Zhongguo Jingji Nianjian She: 1997, Page 831; 2001, Pages 945-946; 2002, Pages 849-850; 2004, Pages 980-981; 2006, Pages 1052-1053; 2007, Page 993; 2008, Pages 880,889. *Zhongguo Tongji Shuju ku*, *Guojia Tongji Ju*, (National Board of Statistics), available at >
<http://www.infobank.cn/IrisBin/Text.dll?db=TJ&no=408324&cs=13667301&str>, accessed January 2009 ;For automobile sales figure: *Zhongguo Qiche Jishu Yanjiu Zhongxin* (ed.), *Zhongguo Qiche Gongye Nianjian 2008*, *中国汽车工业年鉴 2008* (*China Automotive Industry Yearbook 2008*). Page 282.

2005	1,314,480	5.89	13163	7.2	14040	9.6	5758.2	13.54
2006	1,321,290	5.29	14033	—	15931	—	7216.0	25.13
2007	1,397,560	5.17	—	—	18665	—	8791.5	21.84

Figure 6.1 and Figure 6.2 below demonstrate an associated correspondence between Chinese income per capita, the total Chinese population, and the growth rate of the Chinese population. The R^2 of the coefficients, as calculated in Figure 6.1, is 0.933, showing a positive association between the growth of Chinese income per capita and population growth. This indicates that as the increase of Chinese population during this period is related to the increase in Chinese income per capita. However, the R^2 of the coefficients between Chinese income per capita and population growth rate is 0.846, as illustrated in Figure 6.2. We notice a negative slope of the regression line, a negative correlation is observed, which explains that when Chinese population growth rate declines, the Chinese income per capita will increase.

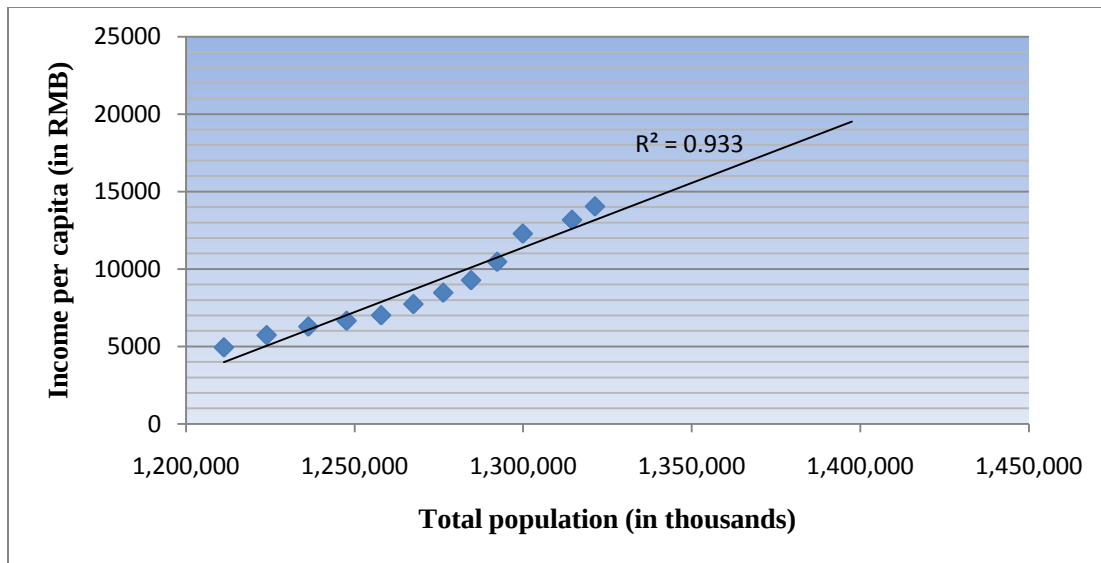


Figure 6. 1. The relationship between China's income per capita and total population, 1995-2006

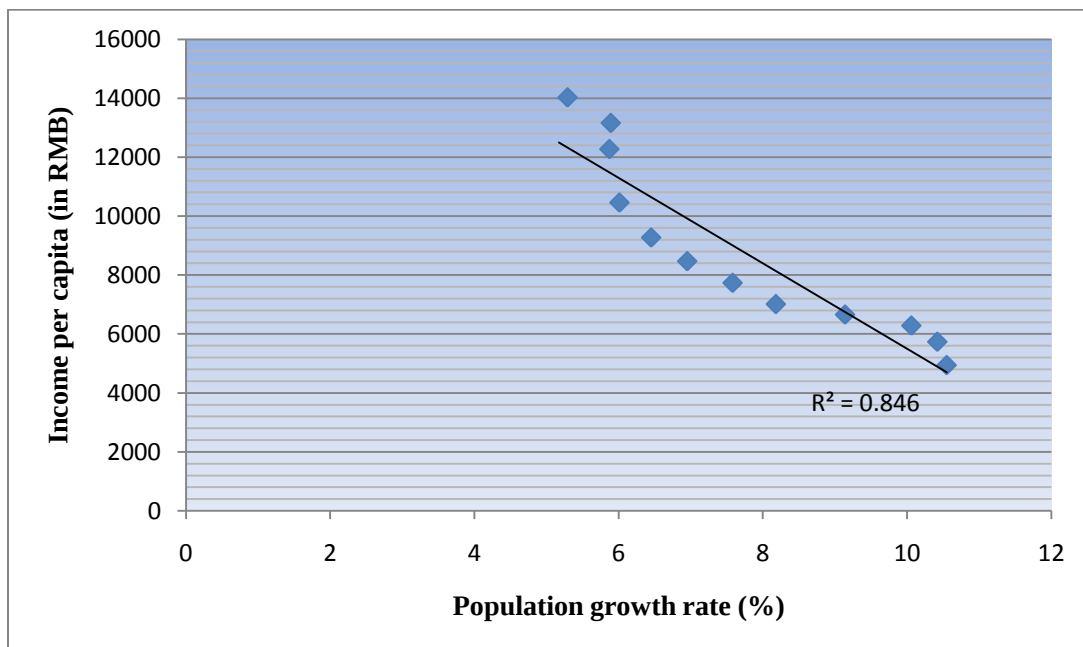


Figure 6. 2. The relationship between China's income per capita and population growth rate, 1995-2006

Based on figure 6.3 and 6.4, we will investigate the correlations among the growth rate of China's GDP per capita, the growth rate of the Chinese population, the growth rate of China's automobile sales and the volume of auto sales. Since the chronological total Chinese population and the growth rate of the Chinese population are inter-related, we will not analyse them as separate variables when measuring their relationship with the growth of automobile sales.

From Figure 6.3 below, it seems that there is no obvious correlation between the growth rates of China's yearly automobile sales and GDP per capita income for the period 1995-2007. GDP normally includes added-values such as government spending and investments and therefore it is not the best measurement of personal income. Similarly, as shown in the scatter plot in Figure 6.4, there does not seem to be an apparent association between the growth rates of China's annual automobile sales and the growth rate of the population for the same period.

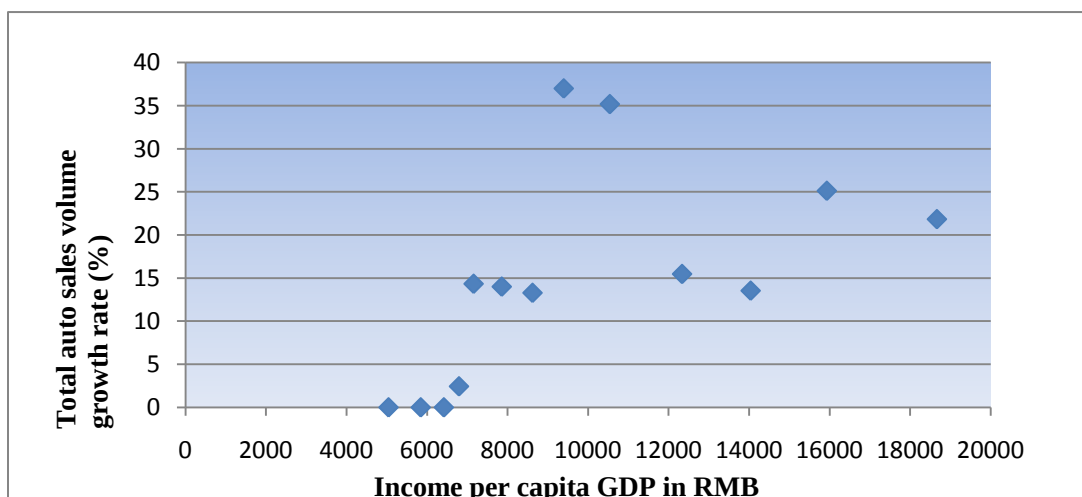


Figure 6. 3. The relationship between GDP per capita and China's auto sales volume growth rate, 1998-2007

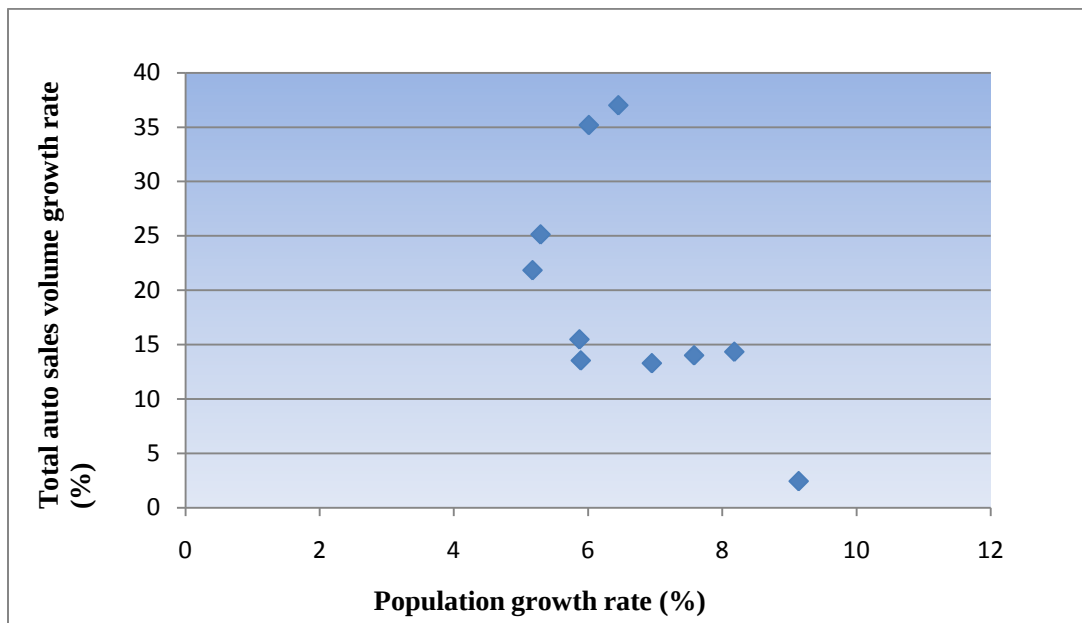


Figure 6. 4. The relationship between China's auto sales volume growth rate and population growth rate, 1995-2007

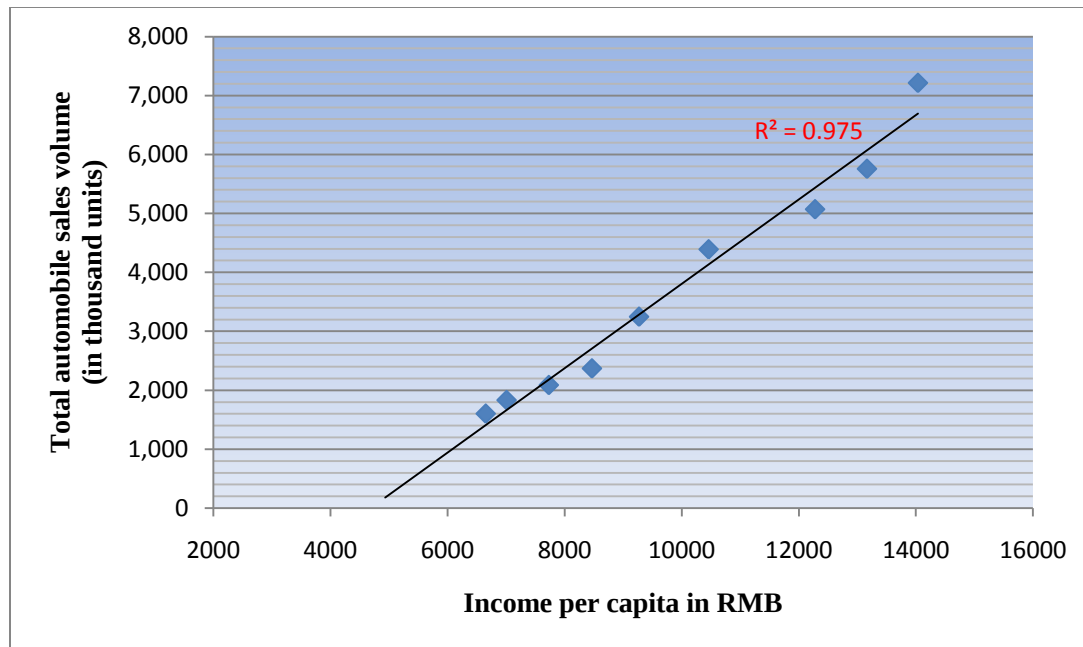


Figure 6. 5. The relationship between China’s auto sales volume and income per capita, 1998-2006

Therefore, we will focus on the relationship between the increase of income and automobile sales. Figure 6.5 above demonstrates a positive correlation between Chinese automobile sales and Chinese income per capita during the period 1998-2006. The correlation coefficient is 0.975. As the Chinese income per capita income increased, automobile sales also increased. This would apply to both automobile JVs and indigenous automakers for the same period.

Table 6.1 summarised the figures relating to the key demographic, economic and automobile industrial indicators during 1995-2006. We have found that certain data for 2007 was not available at the time of writing, and the sampling used here is also very small. However, the regression analysis from Table 6.2 below also shows a p-value of

0.000115, with 95 percent confidence interval. $Y = -3357.97 + 0.716322X$, where Y represents China's automobile sales in thousands and X represent income per capita RMB/per person. This still reflects a positive relationship between income per capita and automobile sales in China for this period. The increase of private car ownership in the entire passenger vehicle sales also corresponds to the increase of income per capita for the same period.

Table 6. 2. Regression coefficient of Chinese income per capita, 1998-2006

	Coefficients	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-3357.97	-7.70948	0.000115	-4387.92	-2328.03
Income per capita (Yuan / person)	0.716322	16.81834	6.43E-07	0.615609	0.817036

As we investigate further the relationship between the auto sales and the population growth rate, we have found as the Chinese population growth rate decreased, the auto sales increased. Table 6.3 below shows that the relationship between China's automobile sales and population growth rate is negatively correlated for the period 1998-2006, as the coefficient is 0.716322. The logarithm value of total auto sales volume further demonstrates a negative correlation to the population growth rate.

Table 6. 3. China's auto sales volume and population growth rate data, 1998-2007

Year	Population growth rate (%) X	Total auto sales volume(unit: thousands) Y	Natural logarithm value of total auto sales volume (unit: thousands) ln Y
1998	9.14	1603.1	7.3797
1999	8.18	1833.0	7.5137
2000	7.58	2088.6	7.6442
2001	6.95	2371.1	7.7711
2002	6.45	3248.5	8.0859
2003	6.01	4391.6	8.3874
2004	5.87	5071.7	8.5314
2005	5.89	5758.2	8.658
2006	5.29	7216.0	8.8841
2007	5.17	8791.5	9.0815

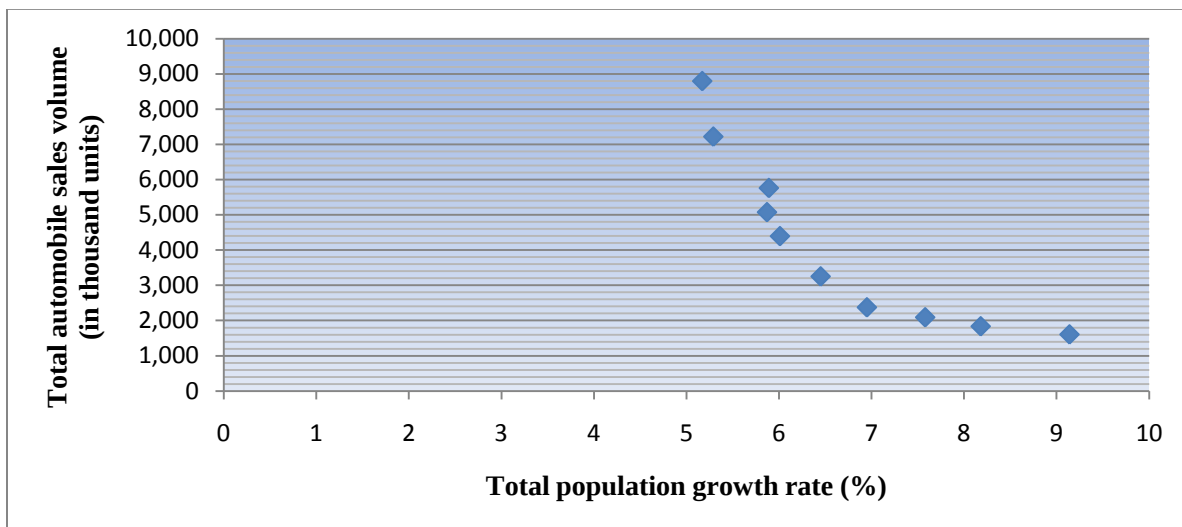


Figure 6. 6. The relationship between Chinese auto sales volume and the Chinese population growth rate, 1998-2006

Figure 6.6 vividly depicts an inverse curvature relationship between the population growth rate and the automobile sales figure. The best fitting formula suggests an exponential relationship defined by $Y = a \cdot e^{bx}$. For Y the natural logarithm (LN) is taken: $\ln Y = \ln a + bx$, and $Y' = \ln Y$, $a' = \ln a$.

The correlation coefficient between the natural logarithm value of China's auto sales volume and population growth rate is -0.95096, as shown below in Table 6.4. Table 6.5 summarises the regression coefficients with p-values. The natural logarithm of the annual automobile sales volume (Y') and the population growth rate (X %) can be expressed as

$$Y' = a' + b X, \text{ or}$$

$$Y' = 11.12156 + (-0.44008) X \quad \text{with } a' = 11.12156 ; \quad b = -0.44008$$

When the p-value is under $8.8E^{-10}$, the correlation is strong and obvious.

Table 6. 4. Correlation coefficient between the natural logarithm value of China's auto sales volume and the Chinese population growth rate, 1998-2007

	Population growth rate (%)	Natural logarithm value of total auto sales volume (unit: thousands)
Population growth rate (%)	1	
Natural logarithm value of total auto sales volume (unit: thousands)	-0.95096	1

Table 6. 5. Regression coefficient of population growth rate

	Coefficients	t Stat	P-value	Lower 95%	Upper 95%
Intercept	11.12156	32.4786	8.8E-10	10.33192	11.9112
Population growth rate (%)	-0.44008	-8.6956	2.38E-05	-0.55679	-0.32337

In conclusion, we can see that the increase in Chinese income per capita is one of the determinants of the growth of its automobile sales for the period between 1998 and 2006. The natural population growth rate, however, is negatively correlated to the automobile sales as explained above. Furthermore, no obvious relationship exists between China's automobile sales growth rate and Chinese population growth rate or with Chinese income per capita for the period 1995-2006.

6.2 China's growing openness and the impact of WTO membership

In 2001 when China entered the WTO, its entire passenger car production was approximately 800,000 units and the majority of vehicle sales were corporate or government enterprises. The private ownership of cars in China was small and owning their own vehicle was still a distant dream for most Chinese citizens. Thanks to the fast economic progress within the seven-year period starting in 2000, China's passenger vehicle sales reached a historical high of more than 5 million units in 2007, showing a growth rate of 500 percent over production in 2001.

The impact of China joining the WTO was first reflected in China's automobile industry's structure and capital re-distribution. When global automakers augmented their investment in China, the survival of Chinese indigenous automobile factories was immediately threatened. To be competitive they had to absorb and adapt automobile technology to cope with the market. Domestically, automobile financing policy and bank lending for automobile consumer sales started to relax after China's entry to the WTO, which provided more opportunities for private buyers who had to pay cash for the purchase of cars in the past. However, the gradual reduction by the end of 2005 of the custom tariff demanded by the WTO on imported cars would no longer provide any protection for Chinese automakers, whether JVs or indigenous. Internationally, from 2001 onwards as a member of the WTO the Chinese government encouraged domestic automobile factories to pursue the export market to balance the import of vehicles and components. This was both good and bad news for the Chinese indigenous automakers and was further complicated by the government's requirements that vehicles were

manufactured with lower emissions, and with a smaller engine size for lower fuel consumption.

After fifteen years of extensive negotiation with the WTO, China understood the advantages of entry into the organisation. Following the WTO principle of a multilateral trade system with global economic cooperation, foreign automobile companies were treated the same as domestic automobile companies in China. A comparison of the structure and capital redistribution before and after 2001 can lead to a better understanding of the impact of China's entry into the WTO. In the 1980s when foreign automakers formed JVs in China, many component factories also built bases in China and marketed their products so that the engine module could be sold separately to indigenous Chinese companies. In particular, Mitsubishi Motors established ventures with various Chinese firms in Shenyang and began to sell its engine products to Chinese automakers in 1998, details of which will be explained later in Section 6.6. Many small Chinese factories could just purchase the engine and transmission, and build chassis and body panels from other suppliers around it to assemble cars. Despite quality and safety issues, this simple vehicle-making practice was widespread in China. In 2001, there were 126 registered vehicle modification factories, which was more than all the automakers in the USA, Europe and Japan combined. However among these Chinese factories, only four had an annual production capacity of 200,000 units. FAW was the only company that had more than 15 percent of the market. As explained in Section of Chapter 3, in its 1994 automobile industry guidelines the Chinese government adhered to the principles of 'high entry level; mass production; and professionalised industry'. It wished, through entry into the WTO, to streamline and centralise the scattered Chinese automobile industry in

order to be more competitive in the automobile market once the WTO tariff was reduced by the end of 2005. Therefore, the 2004 revised Chinese automobile industry policy mandated that Chinese automakers capture at least 15 percent of market share, and focus on the integration of two to three major state enterprises. As a result, as we saw in Section 5.4, between 2002 and 2004 numerous mergers and acquisition took place under the Chinese government's consolidation, among which were the Big Three: FAW, SAIC and DMC.

During the period 2002 to 2004, the Chinese government could only direct the gradual integration of smaller and scattered car modification factories and did not revoke those vehicle-manufacturing permits which were over-issued before 1994. The greater demand for passenger cars led to the expansion of various automakers, which began to raise private venture capital and public financing in the stock market. After China's entry into the WTO, Chinese firms also increased their capital structure by incorporating funds from financial institutions and public trading. For instance, private companies such as Geely and Great Wall Motors successfully went public on the Hong Kong Stock Exchange after 2001. By the end of 2005, the year when China complied with the WTO principle of cancelling the requirement for licenses for imported passenger cars, the number of operating automobile factories had not fallen, but actually rose from 126 to 145, 19 more than the number in 2001. However, it is still difficult to evaluate the impact of China's entry into the WTO on the growth of Chinese indigenous automakers because among the emerging companies, some never seriously invested in the automobile industry, but

simply exploited and took advantage of the financial market.²⁴⁴

As the formation of JVs with foreign automakers was the preferred strategy of the Chinese government in developing its automobile industry, the expansion of foreign automakers became more aggressive after China agreed with the terms and schedules stipulated in the protocol of the WTO. By the end of 2003, every global auto company had built up JVs in China with Chinese partners, which unleashed fierce competition within this emerging market. The Chinese market was no longer dominated by those involved early on, such as Germany's VW and America's GM. The later arrivals were Japan's Toyota, Honda and Nissan and America's Ford Motors, all with their comprehensive product lines. Newer models began to be introduced and sold in China through the network created by their Chinese JVs, and dealerships with 4-S (sales, spare parts, service and survey) systems were established across the country. Policies and regulations in new and used automobile trading, vehicle branding and sales were stipulated in detail and tax and duties on import vehicles were reduced. Overall, China's automobile industry started to mature and became more complicated in its capital structure after it joined the WTO in 2001.

As the JVs made impressive progress in sales and production, the Chinese indigenous automakers also made a great leap after 2001. Of the indigenous factories, both Chery's and Geely's total sales and production in 2003 exceeded 200,000 units, or 11 percent of the entire auto production in China, as explained in Section 4.2. This performance not

²⁴⁴ Ning Bo AUX Group, Midea Group, Greencool Group and Ning Bo Bird were listed on China's Shenzhen Stock Exchange, but had produced no vehicles by 2008.

only attracted attention from the automobile industry in general, but also prompted the government to re-evaluate its policy towards the industry. In April 2003 the Committee of Economic Development of the Chinese State Government carried out a survey to collect information as a reference for forming automobile policy, and stated that the indigenous auto industry should capture a 50 percent of the Chinese automobile market. However, in 2002, one year after China's accession to the WTO, the JVs also increased their sales in China through further investment and expansion. Before China joined the WTO, there were worries that due to the lowering of custom duties, better quality and competitively priced imported vehicles would enter China. This would give an advantage to those foreign automakers that already had JVs with Chinese companies but who did not produce certain models that were manufactured outside China. Toyota, for instance, built four Chinese manufacturing bases (Changchun, Tianjin, Chengdu and Guangzhou) to produce various passenger vehicles, but still brought their expensive Japanese-made Lexus models into the country via Toyota's sales network after the duties on luxury and bigger engine displacement models were lifted. However, because China's market was increasing, foreign automakers and their JVs did not exclusively dominate the market. There was still room for the indigenous automakers to grow and to sell their products. As explained in Section 4.2 of Chapter 4, both Geely's and Chery's passenger car sales still grew 2005 from to 2007, capturing 11.6 percent of the market.

As well as lowering the duties on import vehicles, China's place in the WTO simultaneously helped the Chinese automobile industry to increase its exports. In the decade between 1990 and 2000, China's export of vehicles only totalled 126,500 units,

just one tenth of its entire production.²⁴⁵ After its entry into the WTO, on the other hand, China's vehicle exports to Africa, the Middle East and South East Asia increased impressively. In 2005 alone the figure rose to 168,000 units, exceeding the number of vehicles imported in the same year.²⁴⁶ Though the majority of the export vehicles were commercial vans or mini trucks, it gave the Chinese indigenous companies an outlet for their auto productions. Due to issues such as collision test requirement and emission standards, Chinese indigenous automakers' products had not yet entered developed countries and regions such as the USA and Western Europe by the end of 2008. However, as illustrated in Table 6.5, the annual growth rate of exports in 2005 was 116.13 percent compared with the 2004 figures, and the growth rate of 2006 was 108.45 percent over that of 2005. Because the automobiles made by JVs were designed and sold to China's domestic market and not for export, the indigenous automakers only faced competition for exports between themselves. Overall, the trend to export was on the rise, but its percentage in the entire vehicle production in China was still small: the highest, as shown in Table 6.6 was 6.9 percent in 2007.

²⁴⁵ Zhongguo Qiche Jishu Yanjiu Zhongxin, Zhongguo Qiche Gongye Xiehui (ed.), *Zhongguo Qiche Gongye Nianjian 2006 and 2008: 2006*, Page 340; 2008, Page 475.

²⁴⁶ *Ibid.*, Page 27.

**Table 6. 6. China's export of vehicles before and after its entry
into the WTO, 1996-2007²⁴⁷**

Year	Annual Output of Automobiles (Unit)	Annual Export of Automobiles (Unit)	Annual Growth Rate of Export (%)	Ratio of Export to Output of Automobiles (%)
1996	1474905	15112	-14.85	1.02
1997	1582628	14868	-1.61	0.94
1998	1627829	13627	-8.35	0.84
1999	1831596	10095	-25.92	0.55
2000	2068186	27136	168.81	1.31
2001	2341528	26073	-3.92	1.11
2002	3253655	21960	-15.77	0.67
2003	4443491	45777	108.46	1.03
2004	5070452	75999	66.02	1.50
2005	5707688	164258	116.13	2.88
2006	7279726	342400	108.45	4.70
2007	8882456	612700	78.94	6.90

China's membership of the WTO had an impact on indigenous automobile factories' manufacturing of micro-engine vehicles, but the extent of this is difficult to measure because the Chinese automobile sales and production data includes both JVs and domestic companies. The rapid growth of automobile production and use caused a greater consumption of energy, especially petrol. In 2003, the 24 million vehicles on Chinese roads used up 25 percent of the country's oil production.²⁴⁸ As China's economy continued to show double-digit growth at the beginning of the 2000s, its dependence on imported oil became a matter of grave concern for the government. In the year 2004

²⁴⁷ *Ibid.*, Page 31.

²⁴⁸ Chen, Yanan, 2006 'Xian Xiao Jie Jin, 限小解禁, Lifting of the Restriction on Microcars', 11-17/Z4

alone, China's import of crude oil exceeded 120 million tons, or a 34.8 percent growth over the previous year.²⁴⁹

As shown in Table 6.7 below, China's aggregate consumption of both petrol and diesel is estimated to be approximately 141.75 million tons by 2010.²⁵⁰ Unlike Western European countries, the Chinese government has not yet been supportive of the production of passenger cars with diesel engines. The policy director of the Chinese National Development and Reform Commission, Yang Yongxin, made it clear that saving fuel has been the common goal of the automobile industry, but the pursuit of the diesel-engine passenger cars was not in the best interest of China for the present and, therefore, R&D for diesel-engine technology for passenger vehicles would not be encouraged.²⁵¹ The main reasons behind Yang's statement are China's lack of the latest diesel engine technology, lack of emission standards that applied in the country, and the lack of enough supply of cleaner diesel oil from Chinese oil refineries. By 2007, both Chinese JVs and indigenous automakers had manufactured a very small number of passenger cars with diesel engines, only 0.7 percent of the entire passenger car production, in contrast to 50

²⁴⁹ Zhao, Yin, 2006 'Zhongguo Qiche Jishu Yanjiu Baogao, 中国汽车技术研究报告, Chinese Automobile Technonology Report', *Economic Management*, Page 7.

²⁵⁰ *Ibid.*, Page 8.

²⁵¹ ANON., 2008, 'Jiaochaiyou Fadongji Bushou Zhence Guli, 轿车柴油发动机不受政策鼓励 (Passenger Cars with Diesel Engine Not Being Encouraged)', <<http://www.cmiw.cn/?action-viewnews-itemid-274622>>, accessed 24 May 2009. The development of diesel engine was taken off the 'Chanye Jiegou Tiaozheng Zhidao Mulu, 2005' (Revised Catalogue and Guidelines of Industrial Structure, 2005) in Memorandum Number 40, Clause 13.2 issued by the National Development and Reform Commission, 31 March 2005, NDRC Official web, ANON., (2005) 'Guowuyuan Guanyu Fabu Shishi "Cujin Changye Jiegou Tiaozheng Zanzheng Guiding" de Jueding, 国务院关于发布实施《促进产业结构调整暂行规定》的决定 (State Council's Memorandum Regarding Promotion and Integration of Automobile Industry)' the State Council, <http://www.ndrc.gov.cn/zcfb/zcfbqt/zcfb2005/t20051222_54302.htm> 24 May 2009.

percent of the vehicle population in Western Europe.²⁵²

The expansion of China's automobile industry, including the indigenous factories, was vulnerable to oil price fluctuation. Through its entry into the WTO, the Chinese government realised that making smaller engine vehicles would not only reduce oil consumption but would also benefit air quality. The Committee of Economic Development of the State Department is the most powerful and influential economic policy maker within China. In January 2007, six years after China's entry into the WTO, it issued a memorandum to encourage the development of vehicles with micro-engines and other environmentally-friendly attributes.²⁵³ This government guideline overturned the previous ban on producing micro-engines (less than 1.4 litres) to be used within city limits as a solution to improve traffic flow, and gave a new and clear direction for Chinese automakers, particularly indigenous automakers, to produce economy cars. This will be discussed in detail later, in conjunction with China's market demand for vehicles with smaller engines and how Chinese indigenous automakers responded to this demand.

²⁵² ANON., 2008, 'Zhongguo Chaiyou Chengyongche Fazhan Xiankuang, 中国柴油乘用车发展现状(The Current Status of Diesel Engine Passenger Cars in China)', <<http://www.chnci.com/freereports/2008-10/2008102493555.html>>, accessed 24 May 2009.

²⁵³ Memorandum Number 72 was issued on 17 October 2007 by the National Development and Reform Commission, Beijing, effective 1 November 2007. Under these rules, vehicles using five alternative energy sources (hybrid vehicle, battery-charged electric vehicle, fuel cell electric vehicle, solar energy vehicle and super capacitor and flywheel vehicle) can be produced upon meeting the basic manufacturing requirements of factory investment, engine development capacity, quality consistency and provisions of an after-sales service. ANON., (2007) 'Xinnengyuan Qiche Shengchan Zhunru Guanli Zhunze, 新能源汽车生产准入管理规则 (New Rules Regarding Automobiles with Use of Alternative Energies Approved)' the National Development and Reform Commission, <<http://www.ndrc.gov.cn/zcfb/zcfbgg/2007gonggao/W020071024415850220372.pdf>> 14 April 2009

Table 6.7. Fuel consumption forecast for the automobile industry in China, 2010- 2020 : (Unit in 1,000 metric tons)²⁵⁴

Year	2010	2015	2020
Petrol consumption	70,420	91,610	123,390
Diesel consumption	71,150	93,460	94,450
Aggregate consumption	141,570	185,070	217,840

6.3 The special market segment: Microcars

As stated previously, before JV car manufacturers were formed in the 1980s, China produced mostly military and cargo trucks. The planned economy did not include production of passenger cars for Chinese citizens with the single exception of the ‘Hongqi’ model, which was assembled in limited numbers for privileged government officials and had no industrial or commercial value. When foreign vehicle manufacturers established their bases in China with Chinese partners in the late 1980s, they targeted as their primary customers government and corporate buyers, rather than individuals, who they perceived would prefer cars with bigger engines. As seen in Table 6.8 below, during the period 1995 to 2007 private ownership of vehicles did not exceed 27 percent.²⁵⁵ Most of the cars produced in the 1980s and 1990s, through JVs, had a greater engine displacement than 1.6 litres, with the exception of Tianjin Xiali, which purchased small

²⁵⁴ Zhao, 'Zhongguo Qiche Jishu Yanjiu Baogao, 中国汽车技术研究报告, Chinese Automobile Technonology Report', Pages 8-9.

²⁵⁵ Guojia Xinxi Zhongxin (National Information Center) and Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2008 中国汽车市场展望 (China Automotive Market Outlook 2008)*. Page 432.

engines (from 500cc to 1300cc) from Japan's Daihatsu Motors and assembled four-door microcars for taxi markets. In the late 1990s and early 2000s, while the government-protected Big Three and Small Three flooded the market with medium and full-size passenger cars, the indigenous automakers entered the market with microcars with an engine displacement of less than 1.6 litres as their primary products.

Table 6. 8. Number and growth rate of China's civil and private automobiles, 1995-2007²⁵⁶

Year	Total civil automobiles (1000 units)	Private automobiles (1000 units)	Year to year growth rate of total civil automobiles (%)	Year to year growth rate of private automobiles (%)
1995	10,400.0	2,499.6		
1996	11,000.8	2,896.7	5.78%	15.89%
1997	12,190.9	3,583.6	10.81%	23.71%
1998	13,193.0	4,236.5	8.23%	18.22%
1999	14,529.4	5,338.8	10.13%	26.02%
2000	16,089.1	6,253.3	10.73%	17.13%
2001	18,020.4	7,707.8	12.00%	23.26%
2002	20,531.7	9,689.8	13.93%	25.71%
2003	23,829.3	12,192.3	16.06%	25.83%
2004	26,937.1	14,816.6	13.04%	21.52%
2005	31,596.6	18,480.7	17.30%	24.73%
2006	36,973.5	23,333.2	17.02%	26.26%
2007	42,290.0		14.39%	

The Chinese automobile industry followed the same classification used by Germany's VW to define their automobile vehicles. Table 6.9 below explains how passenger

²⁵⁶ *Ibid.*

vehicles are classified into categories A, B, C, D, E and F and that category A was further divided into A00, A0 and A, by engine size. For instance, as shown in Figure 6.7 below, Geely's hot-selling 'Haoqin' and Chery's popular 'QQ' are classified as A00; the JV FAW-VW's model 'A-4' as category B and model 'A6' as category C, while FAW's 'Hongqi' is defined as category D. In general, microcars were defined as vehicles with an engine size of less than 1.6 litres and with a length of less than 2.45 metres between the front and rear axles.

Geely's 'Haoqing' (2001)

Chery's 'QQ' (2001)



Figure 7. 7. The two most popular indigenous microcars²⁵⁷

²⁵⁷ The author of this thesis took these photos.

Table 6. 9. China's automobile classification system²⁵⁸

Classification	Distance between front and rear axles	Engine displacement	Vehicle type
A00	2~2.2 m	< 1 L	Microcars
A0	2.2~2.3 m	1~1.3 L	Microcars
A	2.3~2.45 m	1.3~1.6 L	Microcars
B	2.45~2.6 m	1.6~2.4 L	Medium engine sedan
C	2.6~2.8 m	2.3~3.0 L	Full-size engine sedan
D	> 2.8 m	> 3.0 L	Luxury limousine

In the USA and Western Europe, the term ‘microcars’ does not imply that the vehicles are secondary, low quality and poorly produced. Microcars with smaller engines still need to meet the minimum carbon monoxide emission standard and to be generally efficient in power and cornering, despite the fact that their price-quality ratio is relatively lower than that of medium- and full-size passenger vehicles. The design of an efficient engine depends heavily on the pursuit of the balance between its consumption of fuel and low emission. Ironically, the idea of making microcars was sometimes misunderstood as producing low-emission vehicles, which is inaccurate. Chinese indigenous automakers tended to target the low-end market by producing fuel-saving microcars, but had difficulty in overcoming the technical requirements in reducing carbon monoxide emissions.

²⁵⁸ ANON., 2007, 'Jiaochu Ruhe Fenlei, 轿车如何分类 (The Categorisation of Passenger Cars)', <<http://bbs.che168.com/thread-175970-1-1.html>>, accessed 15 May 2009. ANON., 2008, 'Jiaochu de Zhonglei, 轿车的种类 (Category of Passenger Cars)', <<http://knowledge.ocn.com.cn/Information/20081227712.html>>, accessed 23 May 2008.

When the Chinese car population increased within cities and metropolitan areas, in addition to the problem of shortage of highways and heavy road congestion, air pollution became an increasing public concern. For instance, the model 'Xiali', a flat-nose subcompact car with four passenger capacity, was produced by Tianjin Xiali in the 1990s. It became very popular, capturing 51 percent of the taxi market in Beijing as a result of its low price, and in 1993 approximately 35,000 yellow 'Xiali' taxis were being used in the capital.²⁵⁹ The 'Xiali' engine used out-of-date carburetion technology, rather than an electronic fuel injection, and it could not meet the E-IV emission standards. As a result, in 1994, Beijing's municipal government banned it. When China made several applications in the 1990s to host the Olympic Games, the issue of air quality was again a matter of great concern. After winning its second bid for the 2008 Olympics in Moscow in 2001, China was resolved to improve Beijing's traffic condition and air quality by improving road condition, and by restricting the entry of small and non-efficient vehicles, including 'Xiali', into the city.

At first, restricting small and non-efficient vehicles in the city was not successful in Beijing partly due to the fact that vast numbers of these types of vehicles already on the road with operating licenses, and partly because there were no alternative replacement for vehicles with such low running costs. However, other cities that experienced a similar congestion and emission pollution problem followed the Beijing municipal government's lead. From 1998 to 2004, more than 80 cities in 22 provinces of China had adopted

²⁵⁹ ANON. Beijing Qiche Aihaoze Wang, 2006, 'Mian Di: Beijing Shenghuo de Ji Yi, 面的:北京生活的记忆 (Micro Taxi: Recollections of Beijing Lives)', <<http://baike.baidu.com/view/69036.html>>, accessed 10 February 2009.

various measures against microcars in an attempt to restrict them.²⁶⁰ In 1998, Beijing's municipal government stopped issuing operating license to micro-passenger vans with an engine size of less than 1.0 litre, even going so far as to dismantle them and turn them into scrap metal. In August 2001, another highly populated and rapidly-developing economic city, Guangzhou, followed suit by stopping the issue of licenses to smaller engine vehicles and set certain routes for those microcars with licenses previously obtained. In September 2001, Shanghai municipality stipulated that micro vehicles with an engine size of less than 1.2 litres were not allowed to enter the municipalities' over-ground highways and tunnels, and were restricted to entering the city at limited hours. At the same time, in Wuhan, the capital of Hubei Province, no microcars with an engine size of less than 1.3 litres were permitted to be used as a rental car or taxi. China issued its first vehicle emission standard in 1979, then followed the European Union standards I, II and III progressively to 2007, but the implementation of the environmental criteria was far from perfect. For instance, some of Geely's self-developed CVVT 1.8 litre engine did not pass the EU III standard, but their products were still allowed to be sold in major cities. On 1 January 2008, Beijing's municipal government mandated the most stringent emission standard EU IV to prepare for the 27th Olympic Games, but its implementation was not easy due to the fact that China did not have a unified national emission standard. The government could only encourage Geely to use better engine technology to build cars able to meet the EU III emission standard for most cities by offering a corporate tax deduction, but the improvement of automotive technology was not expected to happen

²⁶⁰ Zhao, 'Zhongguo Qiche Jishu Yanjiu Baogao, 中国汽车技术研究报告, Chinese Automobile Technonology Report', Pages 7.

overnight. The general consensus from city management seemed to blame Chinese domestic auto factories, claiming that in addition to the emissions from diesel trucks, the inefficiency and slow speeds of their micro cars were the main causes of city road congestion, air pollution and car accidents.

Another purported reason for restricting and banning microcars was the protectionism of the regions where Chinese-foreign JV automobile factories were located. For example, Shanghai municipality not only restricted microcars from entering major overhead highways that network with traffic but it also levied micro cars with the same license fee as charged to bigger engine passenger cars, amounting to tens of thousands of RMB. The sudden requirement for licenses for microcars in Beijing in 1998 ousted them from the city and led to a fall in their sales. During this period of restriction on microcars, sales of the B and C classes of medium and full-size cars from JV companies such as VW-SAIC and GM-SAIC rapidly increased. In Beijing rental vehicles with micro engines were soon replaced by products made by the JV Beijing Automobile Industrial Corporation-Hyundai, which was formed in 2002. The Beijing municipal government regulated that car rental companies must choose models from the dealers of BAIC-Hyundai Corporation.²⁶¹ Meanwhile in Shanghai municipality, the microcars had never even had the chance to be used as taxis or rental vehicles: this market was 100 percent protected for the Shanghai based JV, VW-SAIC.

Despite the restrictions and bans, and local protectionism from major municipalities such as Beijing, Tianjin, and Shanghai, Chinese indigenous automakers still grew rapidly in

²⁶¹ Interview # 7, BAW Beijing, July 2007

the early 2000s in China's secondary cities and provincial areas. Geely, for instance, marketed its products in Zhejiang Province and interior cities. Its strong low price sales pitch, as discussed in Section 4.2, won it a position in the low end market. Chery, with protection and support from Anhui Province, built sales networks in areas where they ran into less competition from JVs. As Chery's major shareholder, the Anhui provincial government exerted influence to have Chery's models selected for primary rental and corporate cars within the province.

The turning point finally came when a survey was conducted by the Committee of Economic Development, in the State Department to re-evaluate the development of microcars. On 4 January 2006, a memorandum collaboratively prepared by six higher government agencies, called 'Encouragement for developing efficient microcars to save fuel and attain a better emission pollutant standard', provided a general guideline to municipal and provincial governments.²⁶² There were four key points. First, China was a big consumer of oil and was vulnerable to the fluctuation of oil prices; second, microcars were not the primary reason for the road congestion. On the contrary, smaller vehicles were easier to park in the city than medium or full-size cars. Third, microcars could be made clean and environmentally friendly. Fourth, municipal and provincial government should not use any inappropriate reason to ban the use of the microcars.

Although this memorandum had no coercive power to lift the ban, it seemed to help reach a settlement between the central and local government in their opposing views towards

²⁶² Chen, 'Xian Xiao Jie Jin, 限小解禁, Lifting of the Restriction on Microcars', Page 2; the six government agencies are the State Development Planning Commission, Ministry of Housing and Urban-Rural Development, Ministry of Public Security, Ministry of Finance, Ministry of Supervision, and the Ministry of Environmental Protection.

microcars. Using information based on the survey the central governments revived the hopes of microcar manufacturers and encouraged re-evaluation of the value of them. Based on their own interests with the municipal and provincial governments, the JVs would continue to produce medium or full-size vehicles, with which they dominated China's passenger car market share up to 50 percent.²⁶³ In view of this relaxed guideline, Chinese indigenous automobile factories wasted no time in expanding their microcars production capacity and market share. As Table 6.10 shows, Chinese indigenous automakers captured more than 50 percent of the microcars market in the classification A00 (less than 1.0 litres), and more than 35 percent in the classification A0 (less than 1.3 litres) from 2004 to November of 2007.²⁶⁴ Notably, the microcars of Class A00 had a trend of increase from 2004 to 2007, but in the bigger engine displacement classifications of A (less than 1.6 litres), B (1.6-2.4 litres) and C-D (larger than 3.0 litres), the self-developed models by Chinese indigenous factories took 20 percent or less of the market share.

Table 6.10. China's indigenous automobile's market shares in various segmented markets 2004-November 2007²⁶⁵

Classification	Type	2004	2005	2006	Jan~Nov, 2007
A00	Sales volume/unit	117969	213188	250398	157160
	Share (%)	60.5	70.2	73.9	73.1
A0	Sales volume/unit	233034	333470	371625	410945

²⁶³ Zhao, 'Zhongguo Qiche Jishu Yanjiu Baogao, 中国汽车技术研究报告, Chinese Automobile Technology Report', Page 8.

²⁶⁴ Guojia Xinxi Zhongxin (National Information Center) and Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2008 中国汽车市场展望 (China Automotive Market Outlook 2008)*. Page 192.

²⁶⁵ *Ibid.*, page 193.

	Share (%)	39.9	50.6	49.1	52.1
A	Sales volume/unit	104813	168065	408109	641626
	Share (%)	11.1	12.8	21.6	26.9
B	Sales volume/unit	52852	56882	100209	167650
	Share (%)	8.2	7.7	10.0	14.6
C+D	Sales volume/unit	23479	31878	43046	55095
	Share (%)	17.3	17.6	16.0	17.0

As explained in Section 6.1, the increase of China's GDP per capita was one of the primary determinants that influenced automobile sales. This was particularly reflected in the private ownership of passenger cars as more individuals could afford to purchase vehicles in China's emerging economy. By the end of 2006, 90 percent of the class A00, A0 and A passenger cars were owned by individuals, rather than businesses.²⁶⁶ Being helped by the Chinese government's U-turn towards microcars from restriction to encouragement, microcar producing factories regained confidence and expressed it through expansion and investment. As China joined the WTO, the barriers for international trade between China and the outside world were lifted, which opened the gates for Chinese domestic factories to export their microcars. The Chinese automotive market was largely dominated by JVs, and the Chinese indigenous auto factories were forced to compete in the areas where JVs had not focused. During the ten years from 1997, the Chinese indigenous automakers clearly located their domestic market for microcars and pushed their export into low-end markets.

²⁶⁶ *Ibid.*, page 196.

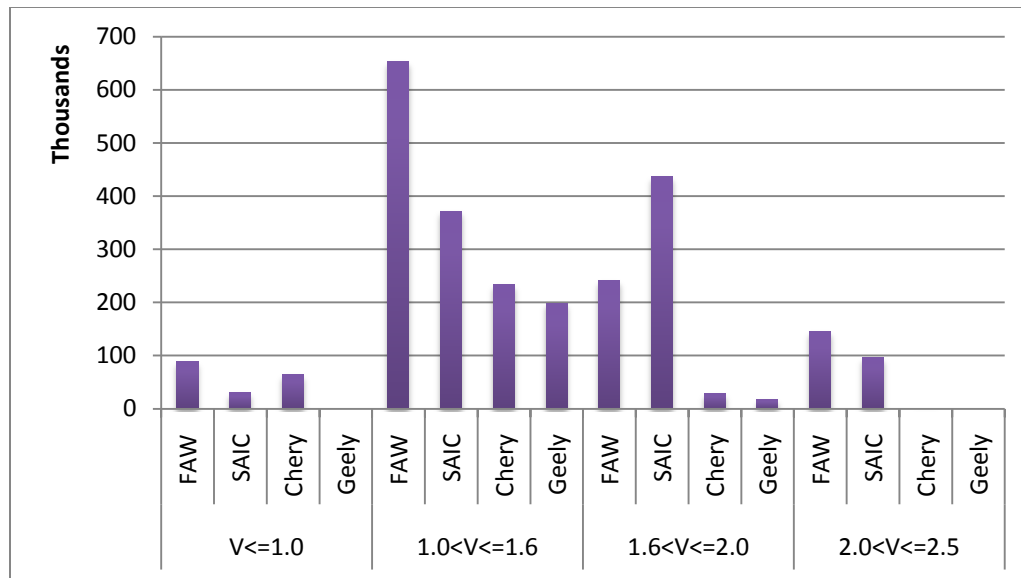


Figure 8. 8. Comparison of model of various engine displacement between Chery, Geely and FAW and SAIC²⁶⁷

In terms of brand positioning, both of the leading indigenous automakers Chery and Geely focused on the low-price markets with less technology barriers. Both Chery and Geely performed well in the category of engine displacement of 1.0 and 1.6 Litres, and in 2007 their sales reached 50 percent of the production by SAIC and FAW. However, their brand name, engine technology, quality and service have not won recognition in the mid-range engine (>1.6 and >2.0 Litres) market, as shown in Figure 6.8. In the category of less than 1.0 L, Chery's sales volume was twice of that of SAIC, while Geely did not have product in this category.

²⁶⁷ The author has made this figure based on the data. Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2008*, 中国汽车工业年鉴 2008 (China Automotive Industry Yearbook 2008). Pages 517-519.

Chapter 7: Examination of the Internal Factors

This chapter focuses on the variety of efforts that the Chinese indigenous automakers, made which played a vital role in their growth. As a rule, different efforts result in different performances. Investment in building factories and in establishing an R&D sector was part of the necessary road map for car-manufacturing companies. Their building of automotive components, which was an essential step to reinforce their ability to manufacture and assemble vehicles, paved the way for their products to become competitive in China's emerging automotive market. Technology spill-over from the presence of foreign component companies and JVs in China had become common. The domestically-owned Chinese companies could either outsource component modules from foreign component companies, or duplicate basic technology from existing foreign factories. During the 2000s, Chinese indigenous factories had no difficulty in obtaining the most advanced automotive technology, with the exception of engine technology, through contracting, licensing, or purchasing from those foreign or domestic component factories. Since the building of automobiles requires various technologies and demands continual fine-tuning of the existing components in its design, function and materials, focus must be on the most important and necessary knowledge that we can identify and

understand the obstacles to growth in the Chinese indigenous auto industry. Section 7.2 will discuss certain new advanced technologies that evolved from the 1980s which had been absorbed by, or made readily available to, the Chinese automakers, including domestic ones. Unfortunately, the Chinese indigenous companies had difficulty in building and accumulating the most essential core engine technology that was needed in a competitive car industry. Among the indigenous companies, the superior ones would be able to build and develop it through their own hard work, while the less competitive factories would purchase it expediently, a situation which was eventually reflected in their performance and growth potential. Finally, building manpower within the development of the Chinese indigenous automakers is examined because without the performance of the workforce, whether professional managers or skilled workers, there would not be a competitive automobile industry.

7.1 Investment in factory building and R&D

The links of the chain within the automobile industry include investment, manufacturing, purchase of components, sales, after-sale service and R&D. As the industry evolved, it

would not be restricted to one particular geographical region. Rather, it could be developed and established within China using a global platform. Since 1980, multinational automakers have re-adjusted their strategy by seeking foreign cooperation, merger or joint development in the emerging Chinese market. To maintain a competitive edge and minimise cost factors, division of labour in these companies has become necessary. They have widely adopted unified platform and chassis design, global component sourcing and purchasing, and system development and modulated component supply in their production. The orthodox Western investment pattern, however, does not fit with the changing Chinese economic reform and the progress of China's automobile industry's development.

Under the planned economy of the 1950s to 1980s, the Chinese automobile industry was at a primitive stage. Its entire production and sales were distributed under the government's direction and companies did not need to be concerned with rivalry in an open and competitive market, and economies of scale in production. The non-government owned automotive enterprises did not have the financial capacity to develop cars and, therefore, state companies such as FAW and DMC were free to focus on this task, as explained in Chapter 2. During this period, there was no competition between

auto factories and the production investment was subject to the budget distributed by the government. The military or cargo trucks that state enterprises produced were government property, used solely by government employees and had no commercial value. Passenger vehicle production was very limited and supplied privileged government elites; therefore investing in the development of commercialised passenger models and mass production assembly lines was not a high priority of the Chinese government.

China received technical assistance and loans from the Soviet Union when building FAW, but from the very beginning it controlled the factory financially without any foreign capital investment. When the Soviet Union withdrew their aid from China at the beginning of the 1960s, the Chinese automotive industry had to rely on its own technology, without which the investment in factory assembly lines was counter-productive. The scale of China's automobile industry at this time was relatively small, but it was independent. As China opened the door for economic growth and international trade in the 1980s, its resources and government spending were limited and prudent. There were no private automotive enterprises or private capital invested in the auto sector. Non-governmental companies with plans to invest in building the simplest motor vehicles

could not obtain permits. The Chinese auto industry would have to rely on foreign technology and financial investment. In exchange for them, China offered not only its less expensive land and labour, but also its market and the guarantee of government protection. As explained in Section 3.3 of Chapter 3, through the 1984 automobile industrial guidelines and the 1994 AIP policy various JVs between Chinese companies and global automakers were formed, which initiated large-scale investments. Based on the 50/50 Chinese and foreign ownership rule, each party could capitalise its investment according to the partners it chose. The Chinese partner normally contributed the land, and factory structure in lieu of required capital, while the foreign company put in funds and technology. During the 1980s, investment from both Chinese and foreign companies began to grow, and the manufacturing of passenger vehicles progressed. In view of the fact that a few foreign companies such as AMC, Peugeot and VW/Audi built a presence in China between 1984 and 1993, the Chinese government extended its plan for expanding JV with foreign partners. The 1994 state automobile industry policy initiated another tide of JVs. In the late 1990s FAW, DMC and SAIC found their respective foreign partners: America's GM and Ford Motors, and Japan's Nissan and Honda.

The investment conditions further improved in the late 1990s and early 2000s, which

allowed Chinese auto firms to have more foreign companies to select from as partners. After China became a member of the WTO in 2001, international trade barriers in China were gradually lifted and cars with reduced tariffs were imported to directly compete with the cars produced by JVs. Foreign companies quickly reinforced their tactical positions in China through expanding the production capacity and the line of products. VW, for instance, in addition to its venture with Shanghai's SAIC, entered into another venture with FAW in 1991 and invested 100 million Euros, introducing more of their advanced models used in Europe or America to replace the older models used in the Shanghai municipality in the 1980s. As explained in Section 3.3, GM and Ford Motors followed suit and increased the amount of their investment in their JV with SAIC and Changan respectively.

The automobile industry requires constant accumulation and investment of capital and production of economies of scale. It not only needs expenditure for factory construction and equipment renovation, but also funding to develop new engine technology for introducing new models and to train human resources. For Chinese automakers there were two ways to accumulate capital: one was to borrow through funding and loans that were guaranteed by the government directly from the bank and the other were to raise

capital through the stock markets. Not every indigenous automaker could be as fortunate as ‘the Big Three’: the Chinese government not only protected their market and JV structure with favourable policies, but also supported them with designated state funding. What is more, in any technology or asset transfer within the JVs of the Big Three with global automakers such as GM, Ford, VW, Toyota, Nissan and Honda, Chinese indigenous auto factories did not benefit. Other less-favoured domestic companies had to source the necessary capital in both domestic and foreign financial marketplaces, in addition to the engine technology. By the end of 2004, more than twenty Chinese automobile companies, including the Big Three, had listed their stocks on the Shanghai and Shenzhen exchanges.²⁶⁸ Great Wall and Geely were the only exceptions, listing on the Hong Kong Stock Exchange in 2003 and 2005 respectively. Through this public financing, Great Wall raised more than HK\$150 million, or the equivalents of US\$20 million, and Geely successfully raised enough capital to meet the minimum required by the Chinese government to satisfy its 2004 revised AIP.²⁶⁹

²⁶⁸ Qiao, Liang, Li Chunbo, Liu Xiaohong, *Zhongguo Qiche Touzi, 中国汽车投资 (China Automobile Investment)* (Beijing: Zhongyan Bianyi Chubanshe, 2005). Pages 134-135.

²⁶⁹ Zheng, *Qiche Fengzi Li Shufu, 汽车疯子李书福 (Automobile Craze Li Shufu)* (Beijing: China CITIC Press, 2007), Pages 205-6.

Chinese indigenous automobile factories entered the automotive market in the late 1990s, investing in production plants, R&D and human resources. Like the foreign companies, they were attracted by the favourable economic climate of the time and the vast and growing market demand for passenger vehicles in China. Pressured by the continuing expansion of the foreign automakers and their globally strategic positioning in China after it became a WTO member, Chinese domestic automakers had to find a way to be competitive. Realising that missing this investment opportunity meant missing profit, they raised capital through either local backing or public funding, and launched into the car manufacturing business. This was the first time that the Chinese auto industry was injected with investment of a domestic nature. For more than a decade (1995 to 2007), Chinese indigenous automobile companies grew independently on their own financing, management and investment without direct foreign investment or partnership. Their investment was initially focused on the building of production equipment such as press and welding equipment, electro-deposit painting factories, body panel construction shops, and assembly factories. Among the indigenous companies, Chery and BYD allocated approximately 5.3 and 6.3 billion RMB respectively to general manufacturing and 1.25 and 1.5 billion RMB respectively to R&D, which demonstrated their efforts to improve their technological competitiveness. As shown in Table 7.1 below, these two companies'

R&D investment represented more than 23 percent of their manufacturing investment, while other companies such as Great Wall, Geely and Lifan spent considerably less in the same area.

Table 7. 1. Chinese indigenous auto factories' investment in factory-building and R&D, 1995-2007 (RMB in billions)²⁷⁰

Company name	Manufacturing investment	R&D investment	R&D/Manufacturing investment ratio
Chery	5.3	1.25	23.6%
Geely	10	1.0	10%
Great Wall	3.65	0.5	13.7%
BYD	6.3	1.5	23.8%
Lifan	6.09	n/a	n/a

In the sector of engine and transmission development only four companies - Chery, Geely, BYD and Great Wall- set up R&D divisions. Lifan, originally a successful motorcycle factory, entered the car-making business solely as a vehicle modification company. It

²⁷⁰ The information are collected data from the websites of Geely, Chery, Great Wall, BYD and Lifan: available at ><http://www.geely.com>; <http://www.chery.cn>; <http://www.gwm.com.cn> ; <http://www.bydauto.com.cn/>; <http://www.lifan.com.cn/gb/index.asp>, accessed 1 February 2009.

outsourced engines and transmission from Japan's Mitsubishi and built body panels and other components around them. Like many other car modification factories, it did not have adequate resources to develop its own engine and had to borrow foreign engines, even outsourcing the R&D for its vehicle design.²⁷¹ Great Wall Motors was similar, using the 2.3 litre displacement engine GW471QE from the Japanese engine producer Isuzu and assembling its light truck in northern China. On the other hand, Chery and Geely made efforts in their engine and transmission development and focused on the design of uniform chassis and related electronic components. As discussed in Section 5.1, BYD, a newcomer in China's automobile industry, utilised their experience in the rechargeable battery business and researched the idea of combining the combustion engine with an electricity source from lithium/steel battery packs for their hybrid vehicle. Its R&D investment ratio was the highest among the indigenous automakers, but its focus was on the battery technology that interfaced with the combustion engine, which BYD still outsourced.²⁷²

Automobile manufacture is a highly capital- and technology-intensive industry because it

²⁷¹ Interview # 8, Lifan Chongqing, March 2008

²⁷² Interview # 3, BYD

constantly requires a substantial investment in developing new models. In the USA and Germany, for instance, development of a new model would normally cost more than US \$100 million for a new engine, components and body-style design, as well as tooling for all the components within the design of this model. As of 2007, approximately 77 percent of the Chinese automobile market was controlled by the Big Three and their foreign JVs, which were able to continue to introduce newer and more competitive models into China. Due to insufficient investment in engine design for new models, the Chinese indigenous automakers had to compete in markets where JVs were not concentrated, with lower-priced and smaller-engine models.

Investment in building factories was also reflected in Chinese indigenous companies' strategic positioning for their marketing and sales efforts. Figure 7.1 below shows that the production factories of Chinese indigenous automakers were established extensively through various regions of China. Since each company started and developed its business in its own territory, the distribution of their locations was not gathered as a cluster, as opposed to the automobile companies in Detroit or the Lake District in the USA, or the major five industrial cities (namely Tokyo, Yokohama, Osaka, Kobe and Nagoya) in Japan. Chery made their factory investment within Anhui Province where it received

favourable support from the provincial government. It did not invest in other regions because it could not find any financial advantage or political support for building factories in other provinces. Geely was different. As it was a publicly-listed and privately-managed company, Geely invested in its factories at its own discretion. From 1999 to 2007 Geely built six factories in different locations: Ninghai, Ningbo, Taizhou, Shanghai, Xiangtan and Lanzhou. The first three factories are located in Zhejiang Province where Geely began, while the fourth Xiangtan factory is in Hunan and the fifth Lanzhou branch is in Gansu Province, both of which are in interior regions. The factory in Shanghai was the only exception. This was done because Geely found that competition from the Big Three and other domestic factories in the interior provinces was lower. Great Wall mainly invested in rural Hebei Province and developed its truck and pickup vehicles for the farming market. BYD established its business by buying the manufacturing licenses of a bankrupt company in Shanxi Province, but expanded by building a factory in the coastal province of Guangdong, as explained in Section 5.1. Lifan, a converted motorcycle company in Sichuan Province, built factories in Sichuan and Yunnan provinces, and one in Huhehaote, the capital of one of China's autonomous regions, Neimenggu (Inner Mongolia). Lifan considered that building factories away from coastal provinces and municipalities was likely to avoid competition with the major

Chinese-foreign JVs.²⁷³

²⁷³ Interview # 8, Lifan Chongqing, March 2008.

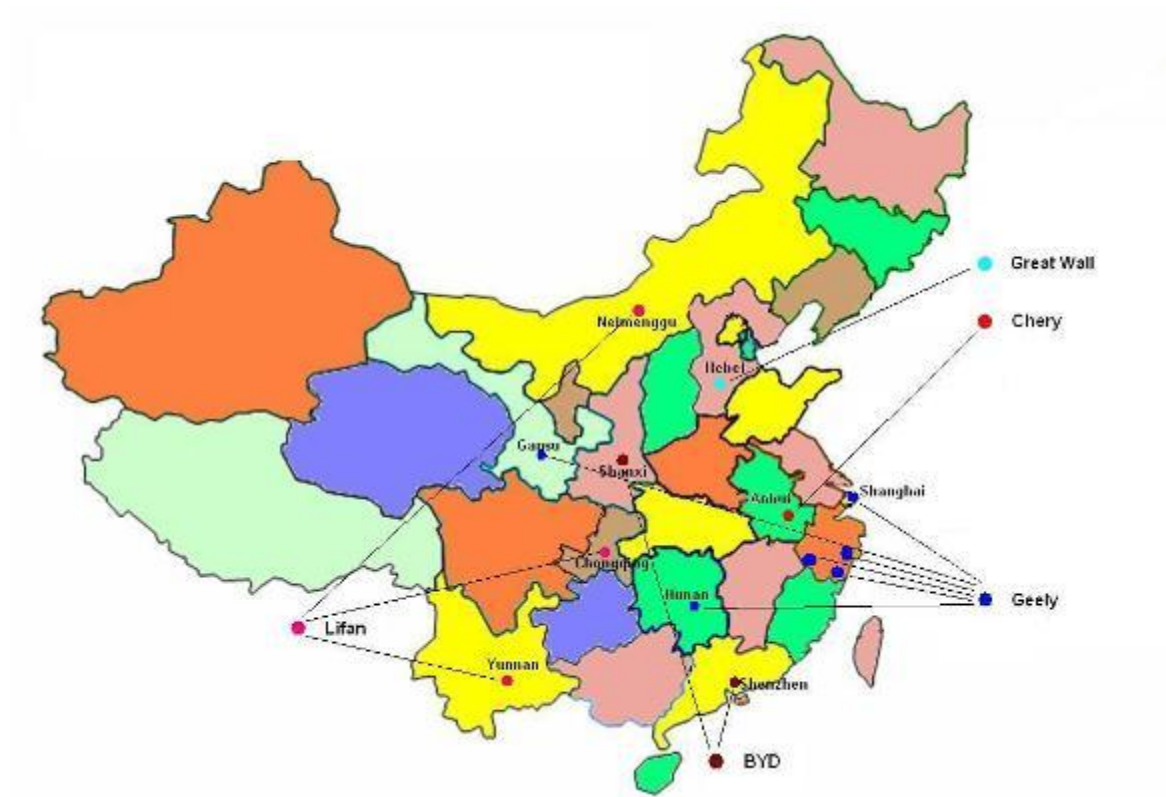


Figure 7. 1 The distribution of major Chinese indigenous automakers, as of 2007²⁷⁴

The investment made by the Chinese indigenous automakers in factory building during the period 1997 to 2007 resulted in a boost in their production capacity. The projected manufacturing capacities of each factory were much larger than their actual production and sales, but there seemed to be no plan for them to scale down. They expected the

²⁷⁴ The author of this thesis has created this map, based on the locations of the major indigenous automakers.

sales and demand to continue to grow at the same rate as it had in the past decade, approximately 20 percent yearly, as explained in Section 1.1 of the first chapter. As the automobile financing market and the government policy relaxed after China's accession to the WTO, buying capacity increased accordingly, especially in the sector of microcars.

Table 7. 2. The investment of the major indigenous automakers in factories and R&D²⁷⁵

²⁷⁵ The author of this thesis has made this table, based on the following data: Sun Yuchun, 2006, 'Qirui: Chuangxin Liangchu "Zhongguo Mingpian", 奇瑞:创新亮出"中国名片" (Chery Shows its Chinese Trump Card)', <<http://theory.people.com.cn/GB/40557/56837/56839/4111732.html>>, accessed 5 June 2009, ANON., 2006, 'Zhejiang Jili Konggu Jituan Youxian Gongs, 浙江吉利控股集团有限公司 (General Introduction of Zhejiang Geely Holding Group)', <<http://www.hudong.com/wiki/浙江吉利控股集团有限公司>>, accessed 5 June 2009. ANON., 2009, 'Taizhou Gongye Touzi, 台州工业投资 (Taizhou Industrial Investment)', <<http://lqda.luqiao.gov.cn/InfoPub/InfoView.aspx?ID=413&CurrentPageIndex>>, accessed 7 June 2009. ANON., 'Changcheng Qiche Fazhan Licheng, 长城汽车发展历程 (Chronological Events of the Great Wall Motors)', <<http://www.gwm.com.cn/html/about/history.asp>>, accessed 15 May 2009. ANON., 2008, 'Biyadi Qiche Gufen Youxian Gongs, 比亚迪汽车股份有限公司简介 (Brief Introduction to BYD)', <<http://www.bydauto.com.cn/corporate/intro.php>>, accessed 7 June 2009. ANON., 2008, 'Biyadi Shengzhen Yanfa Zhongxin Luocheng, 比亚迪深圳研发中心落成 (BYD Establishes R&D Centre in Shenzhen)', <http://www.fdi.gov.cn/pub/FDI/tzdt/dt/t20080228_89893.htm?fclose=1>, accessed 7 June 2009. ANON., 2007, 'Guanyu Lifan, 关于力帆 (About Lifan)', <<http://www.lifan.com/auto/onlifan.asp>>, accessed 7 June 2009. ANON., 2008, 'Lifan Chizi Yiyi Zhengshi Shangma Weiche Xiangmu, 力帆斥资 10 亿正式上马微车项目 (Lifan Invests 1 Billion RMB to Engage in Microcar)', <<http://cq.qq.com/a/20080725/000427.htm>>, accessed 7 June 2009.

Company & factory locations		Investment (in billions RMB)	Estimated Annual production capacity (units in thousands)	Models (commercial and passenger)	Investment period
Chery	Wuhu Passenger car factory	4.5	850	Fengyun, Qiyun, A5, Easter, Ruihu, Easter Cross, A3	1997~2006
	Wuhu commercial vehicle factory	0.8	80	Commercial vehicles	2006 (by merger)
Geely	Linhai passenger car factory	1.2	80	Haoqing, Youliou, Meirenbao,	1997~1998
	Ningbo passenger car factory	—	100	Ziyoujian, Yuanjin	1999 ~
	Luqiao passenger car factory	4.91	300	Jingang	2002~2004
	Shanghai passenger car factory	—	200	Haiyu, Haixun, Haishang, Haifeng	2000~2002
	Xiangtan passenger car factory	2	100	Jingang, Yuanjin	2006~2010
	Lanzhou passenger car factory	1	100	Ziyoujian	2006~2010
Great Wall	Baoding pickup factory	0.3	50	Di'er, Saiku, Sailing, Saiying	2000~2003
	Baoding Passenger car factory	3.35	300	sedan、MPV、SUV、CUV	2003~2007
BYD	Xi'an passenger car factory	2	200	F3	2003~2007
	Shenzhen passenger car factory	4.3	200	S、F、M Electric Sedan	2006~2007

Lifan	Chongqing Passenger car factory	2.4	150	520、620	2004 ~
	Huhehaote Passenger car factory	1	50	SUV, MPV	2006 ~
	Chongqing passenger car factory	1	150~200	Microcars	2008 ~
	Yunnan truck factory	0.69	60	trucks	2004~

During the ten year period in question, Chinese indigenous automakers had expanded their production bases into interior provinces where there was less competition. As indicated in above Table 7.2, despite the investment figures of Great Wall, BYD and Lifan being ongoing, the ratio of their investment between R&D and factory building seemed small, as opposed to that of Geely and Chery. This explains why the latter two companies outpaced the rest of the competition in developing engines for their own models and maintained their technological independence. However, the entire investment of Chinese indigenous automakers during the decade (1997 to 2007) was only approximately US\$530 million, a relatively small figure compared to the USA, whose yearly development budget in the 1990s was in the region of US\$8 billion.²⁷⁶ However, the USA's R&D spending was focused on by only three large companies, GM, Ford, and

²⁷⁶ Womack, *The Machine that Changed the World*. Page 133.

Chrysler, in contrast to the many smaller and scattered Chinese indigenous companies.

Realising its lack of technology and capital, the Chinese car industry from the beginning did not adopt a complete vertical integration system as illustrated by the Ford Motor Company. Ford Motors dominated the American automotive market in the 1910s and 1920s by making everything connected with its Model 'T' from the basic raw materials upwards. In the first phase of Chinese automotive history (1953-1984), the military truck and bus were the only vehicles produced by the manufacturing plants. There was no market for mass production and the state-planned economy dictated the quantity and quality of production from the state enterprises FAW and DMC. As the annual production in this period was at between 60,000 and 70,000 units, the components supply chain was stable and the quality of vehicle produced by them was never questioned.

In the 1980s, when the VW Group and AMC started their JVs in China, there were no component suppliers ready to meet the demands of the assembly plants. The foreign companies had to rely on the import of CKD in their production, which was not in China's best interests for developing its automobile industry. Following MNC's presence

in China in the 1990s and 2000s, numerous suppliers of primary foreign components established factories around the assembly plant. For example, as a direct result of the German VW-SAIC's venture in Shanghai over 100 component factories designated by VW moved to the Yangzi River region within a short distance of its factory. Similarly, Toyota in Guangzhou also demanded that its suppliers be built and located within a 250 mile radius of its factory, a venture with Guangzhou's GAIG.

The Chinese government had the same concern with the automotive component industry as with the automobile industry, i.e. to make sure it did not lose control of the technology to foreign companies. The 1994 Automotive Industry Policy stipulated that no approved automotive JV was allowed to bring SKD and CKD manufactured systems into China. This was to prevent the importers from taking a shortcut in their component production by bringing in the engine and transmission module, chassis assembly and vehicle body with the driver and passenger capsule. In order to ensure its effectiveness, the policy set a high import tariff in relation to the extent of the imported components. For instance, if the components were 100 percent imported, the import duty was 50 percent. When the domestic components in a module reached 40 percent in value, the import duty would be

reduced to 30 percent accordingly. Moreover, as the domestic parts of a module reach 80 percent, import duties would be reduced to 20 percent.²⁷⁷

This Chinese local rule played a protectionist role in the growth of the Chinese automobile industry, and lasted for eight years between 1994 and 2001 until China entered the WTO. Upon becoming a member of the WTO, China had to abolish the requirement for a minimum of 40 percent of domestic-made parts to be made by the factory, and to lessen the import tariff on the components and complete vehicle. China was also requested by the WTO not to restrict importing CKD and vehicle body modules, and to set the ratio between import and export in order to balance China's trade in import and export.²⁷⁸ The tariff rates applied with 80 percent and 40 percent on imported parts in 2000 had been reduced to 25 percent and 10 percent respectively by 2006.²⁷⁹ During the interim many automotive-related enterprises could still make a lucrative profit as a result of the difference between importing the complete vehicle and assembling the

²⁷⁷ ANON., 2000, 'Jiaru WTO Dui Woguo Qiche Gongye de Yingxiang ji Duice, 加入 WTO 对我国汽车工业的影响及对策 (The Impact and Response of the Chinese Automobile Industry upon Entering the WTO)', <<http://auto.sina.com.cn/news/2000-05-02/312.shtml>>, accessed 17 May 2009.

²⁷⁸ *Ibid.*

²⁷⁹ ANON., 2001, 'Guochanghua yu Quanguo Caigou, 国产化与全球采购 (Nationalised and Globalised Purchase)', <<http://www.qiche.com.cn/files/200104/26028.shtml>>, accessed 17 May 2009.

vehicle by importing the CKD. Putting an end to this practice, the revised Chinese Automobile Industry Policy of 2004 stipulated that importing any two of the five automotive modules, i.e. engine, vehicle body, front and rear chassis, transmission and electric power steering, would be levied at the same import tariff rate as the complete vehicle; and, if the imported components represented more than 60 percent of the vehicle components in cost, the levy would be applied to the complete vehicle.²⁸⁰

Alongside the automobile industry, from 1976 to 2005 total investment in the Chinese automotive component industry, including that of indigenous automakers also progressed swiftly. Before 1985, the component suppliers were affiliated with the truck and military vehicle-makers such as FAW and DMC. After 1985, with the establishment of JVs and the direction of the government policy to promote the automobile industry, the automotive sector began to adjust to meet the demand for passenger cars. From 1980 to 2000, as shown in Table 7.3 below, the aggregate investment of automobile assembly and automotive components increased almost twenty-fold. Comparing the period of 1991-1995 to the preceding period of 1986-1990, the growth rate is almost 432 percent and the fastest since 1980. But the ratio between the aggregate investment in automobile

²⁸⁰ *Ibid.*

production and automotive component manufacturing has been maintained at between 1:0.3 and 1:0.4 during the whole thirty-year period 1976 to 2006. In general the Chinese automakers, whether JV or indigenous, have relied heavily on the existing supply chain from their foreign partners and have not themselves invested substantially in the component industry. This is a big contrast to the American, German, and Japanese automotive industries where the ratio between automobile and component production for the same period was about 1:1.1 to 1.3.²⁸¹ As shown below in Table 7.3, the Chinese investment in vehicle production in the period of 2000 to 2005 was 231.6 billion RMB, approximately fifty times of that in the component industry from 1980 to 1985 (4.444 billion RMB).²⁸² The protection policy to restrict foreign companies from bringing CKD into China to assemble vehicles did not have an immediate impact on China's own investment in the parts industry. The ratio of Chinese investment in vehicle assembly

²⁸¹ ANON. (ed.), *Woguo Qiche Lingbujian Gongye Xianzhuang Fenxi he Zhanwang*, 我国汽车零部件工业现状分析和展望, *Analysis and Outlook of Chinese Automobile Parts Industry* (2: China Academic Journal Electronic Publishing House, 2002). Page 22.

²⁸² Zhongguo Qiche Gongye Xiehui Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2001*, 中国汽车工业年鉴2001(*China Automotive Industry Yearbook 2001*) (Tianjin: Zhongguo Qiche Gongye Nianjian Qikan She, 2001).Page 4; ANON., 2006, '2006 Zhongguo Qiche Lingbujian Qiye Touzi Chongzu Fenxi Baogao, 2006 年中国汽车零部件企业投资重组分析报告 (Report on the Investment and Merger of China's Component Industry 2006)', <http://www.pday.com.cn/research/2006/6311_autoparts.htm>, accessed 24 May 2009.

and components industries in the five periods (the five five—year periods between 1980 and 2005 was between 1:0.30 and 1:0.56, which indicates the heavy dependence on purchasing components from global suppliers and their JVs in China.

Table 7. 3. China’s investment amount and ratio in the vehicle and component industries, 1980-2005²⁸³

(Investment ratio = Investment in vehicle production/ Investment in component industry. Unit: billions of RMB)

Year	1980-1985	1986-1990	1991-1995	1996-2000	2001-2005
Total investment in auto industry	4.443	17.241	75.605	96.772	231.6
Investment in vehicle production	2.852	13.283	54.567	70.323	174.7
Investment in component industry	1.591	3.958	21.038	26.449	56.9
Investment ratio	1:0.56	1:0.30	1:0.39	1:0.38	1: 0.33

7.2 Growth of five component technologies since the 1980s

By the end of 2000, there were more than 20,000 automotive-related companies in China supplying both motorcycle and automobile factories.²⁸⁴ Most of the component factories

²⁸³ *Ibid.*

were of smaller-scale and geographically scattered, producing a single component but not an integrated module. Although there were many component companies, they could hardly satisfy the demand of automakers in terms of quality and delivery efficiency. Between the 1980s and 1990s, the automobile industries in Western Europe, the USA, Japan, and Korea had begun modularising the making of automotive components, but the disorderly Chinese automobile component suppliers were still struggling in the areas of gathering capital, human resources, and technology.

Since the latest core technology is controlled by the MNCs, the corresponding component standards and specifications have been designated by them. The Chinese indigenous component factories wanted to receive orders from the JVs, but they would have difficulties in meeting the specifications required by the foreign partners in the JVs. The MNC's parts suppliers, normally large and well established, and competitive in technological strength and mature in management, have supplied the JVs. On the other hand, the Chinese indigenous parts companies were found lacking the independent innovation and capacity for self-development and could not produce a global brand name that is reputable. Without the backing of the Chinese government, it has been hard for

²⁸⁴ Zhongguo Nei Ran Ji Xiehui, *Nei Ran Ji Peijian*, 内燃机配件 (*Internal Combustion Engine Components*) (Shijiazhuang, Hebei: Zhongguo Nei Ran Ji Xiehui Press, 2002). Vol. 2, Page 38.

Chinese indigenous component factories to invest in R&D and to improve business connections with global automobile manufacturers. As a result, they have been unable to build a long-term supply and demand relationship in international component supply chains and a strategy to pursue independent development.²⁸⁵

Before the 1980s, the automobile in the USA had undergone very little revolutionary technological change. During the 1960s and 1970s, GM and Ford Motor Company's dominated the USA market and focused on car-styling changes rather than the development of new automotive technology to maintain their clients. This approach was mocked by European automakers, which tended to alter the appearance of their vehicle products much less. Then the average age of trade-in cars in the USA was two and a half years, and the styling of each year's new model largely influenced its market share. With increasing competition among major car manufacturers from Europe and Japan in the 1980s, the search for new car-building technology became necessary. The automakers started researching the areas of fuel saving, reduced emissions and safety, in addition to engine horse power, all of which needed constant improvement. In the 1980s, a series of technological innovations were exploited in the automobile industry to meet safety

²⁸⁵ Thun, *Changing Lanes in China*. Pages 290, 292.

requirements and the increasingly stringent guidelines set by most countries because of the increasing cost of fuel and growing concerns regarding carbon emissions. These technologies had been researched and developed largely in the car industry in Western Europe, Japan and the USA. Each component of these technologies progressed beyond its previous version by a considerable degree. In the category of general technological improvement, components have been refined in terms of their function, efficiency, durability and improvements in manufacturing costs. In the automotive core technology such as the engine and transmission, the making of components requires cumulative data from lab tests and knowledge that is obtained through R&D over a longer period of time.

The Chinese component industry had served the military vehicle makers since the 1950s and already possessed the ability to make basic parts such as body parts, chassis, interior panels, seats, mirrors, tyres and windscreens. However, it lacked the ability to develop and improve the core technology of the engine. The Chinese component industry started to gain ground in the 1980s when various global automotive technologies evolved to enhance the car's performance, safety and environmental credentials. As China opened its market to trade, the MNCs saw this as the right time to apply and market their latest component technology using the vehicles that were being produced in China. Chinese

component factories thus benefited from technology transfer through either technological cooperation or dealing with the MNCs and therefore avoided having to develop these parts entirely on their own. In order to examine and understand how the Chinese indigenous automobile factories have adopted those technologies that evolved since the 1980s, with the exception of the engine department, a brief explanation of the following technologies, their utility, function and growth is needed.

7.2.1. Polyurethane bumpers

Before 1980, most cars sold in the world were equipped with bumpers made of steel or aluminium, providing a buffer with hardness and durability at both the front and rear ends of the car to protect it from collision. The metal bumper of the car was then coated with chrome to make it appear bright and shiny. However, the chrome corroded and peeled over time and as the salt used on roads during the winter to prevent ice from forming ate into it. In addition, the chroming business was not welcomed by any city or state because of its heavy use of industrial sulphuric acid, which is corrosive and harmful. Moreover, metal bumpers were heavy, which affected the driving and the performance of the car.

Engineers have improved the efficiency of vehicles through adoption of strong and light nanomaterials to reduce excessive car weight.²⁸⁶

Car manufacturers began to think of materials of less weight to replace metal bumpers, and a plastic version was introduced in the late 1970s. Though they were light in weight and of new material, plastic bumpers tended to crack and break in the cold weather. At the beginning of the 1980s, the polyurethane bumper (as illustrated in Figure 7.2 was introduced by GM in the USA, replacing the plastic bumper that had survived in the market for only a decade.



Figure 7. 2. Polyurethane bumper²⁸⁷

²⁸⁶ Kurzweil, Ray, *The Singularity Is Near (When Humans Transcend Biology)* (Penguin Books, 2005).Page 246.

²⁸⁷ The picture of a polyurethane bumper is downloaded with the approval of Pacific Best Inc. Los Angeles, California USA. ANON., 2005, 'Picture of Polyurethane Bumper', <<http://WWW.pacificbestinc.com/cataloginfo.asp?cat=7>>, accessed 10 February 2008.

There are key advantages to the polyurethane bumper. It is highly resistant to salts, oils, solvents, fats, greases and gasoline, thus offering longer life in the cold winter. It has outstanding resistance to oxygen, ozone, sunlight and general weather conditions, and is better than the chromed bumper with regard to the environment. Compared to plastic, the polyurethane bumper offers impact resistance, making it safer during a crash. Materials and tooling costs are lower than costs for steel and metal bumpers. The reinforcement bar behind the polyurethane bumper is also reduced in size and weight. The decreased logistics cost in shipping and warehousing is beneficial to the manufacturers and distributors. Since the polymer material is pliable it gives flexibility to car engineers when designing a new model. It is also recyclable and environmentally friendly. As indicated below in Figure 7.3, the polyurethane is softer than rubber but harder than plastic in its characteristics. In view of the above advantages, the use of the polyurethane bumper is a positive choice for car companies.

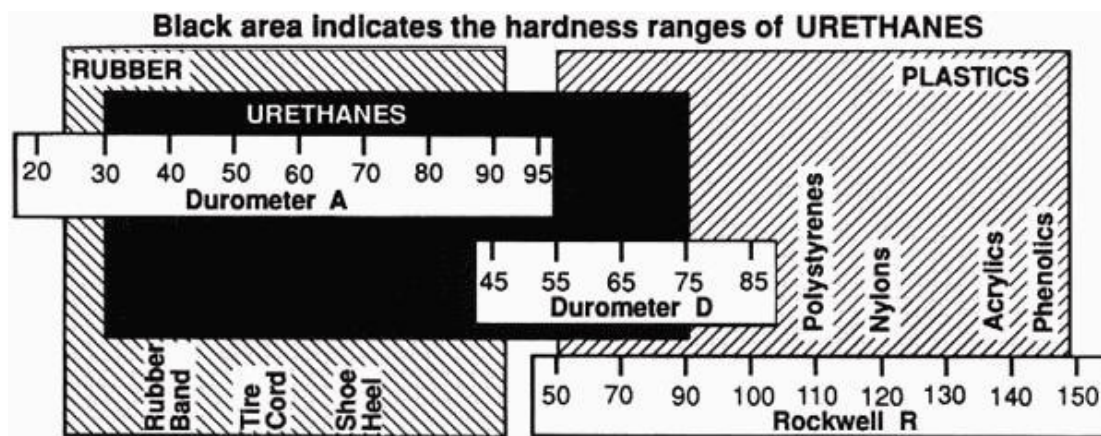


Figure 7. 3. Figure Properties of polyurethane²⁸⁸

This extraordinary combination of physical, mechanical, and environmental properties has led to the full utilisation of polyurethane in the automobile industry across the world. By 1985, almost all the passenger cars made in developed countries had polyurethane bumpers. Polyurethane has also been widely applied to other car components such as interior panels, the steering wheel cover and the instrument panel. However, making the bumper and other components with this material requires a petrochemical supply network, and substantial investment in tooling and injection machinery. The indigenous automobile factories still used plastic to make bumpers until the early 1990s, only starting to adopt polyurethane for making bumpers in the beginning of the 2000s.

²⁸⁸ With the approval of the company, this illustration is from San Diego Plastics, California, USA.

ANON. San Diego Plastics, 1997, 'Picture of Polyurethane',

<<http://www.sdplastics.com/polyuret.html>>, accessed 10 February 2008.

7.2.2. Aluminium radiator and air conditioning condenser

Before 1982 copper was the only material used in the radiator (as shown in figures 7.4), which transfers heat from the combustion engine. Copper is considered a good conduit that dissipates heat faster than other metals, and was also relatively inexpensive. The upper and lower water tanks that attached to the core of the radiator were made of brass for a similar reason. The water tanks tended to leak after the soldering was constantly heated by the anti-freeze in the radiator. For a period of five years in the 1980s, copper-tanks were changed to plastic-tanks to avoid leaks. However the plastic tank was inclined to break from the shocks and vibrations of driving motion.



Figure 7. 4. Copper radiator with brass tanks²⁸⁹



Figure 7. 5. Aluminium radiator with plastic tanks²⁹⁰

In 1982, car manufacturers changed the material of the radiator core from copper to aluminium (as shown above in Figure 7.5) for two reasons: first, to help with weight reduction; and second, to increase the capacity for dissipating heat as engines run more efficiently at higher revolutions per minute (RPM), compared to those using copper. The aluminium-core radiator has approximately 30 percent more cooling capacity than the copper-core radiator. Within ten years of its first production between the 1980s and 1990s, nearly all car makers had chosen aluminium as the material for making radiators,

²⁸⁹ This picture of a copper radiator is downloaded with the approval from Pacific Best Inc, Los Angeles, California USA. ANON., 2005, 'Picture of Copper Radiator', <<http://www.pacificbestinc.com/cataloginfo.asp?year=1988>>, accessed 10 February 2008.

²⁹⁰ This picture of an aluminium radiator with plastic tank is downloaded with the approval of Pacific Best Inc, Los Angeles, California USA. ANON., 2005, 'Picture of Aluminum Radiator with Plastic Tank', <<http://www.pacificbestinc.com/cataloginfo.asp?cat=3>>, accessed 10 February 2008.

thus replacing the conventional copper versions. With a few exceptions such as farming vehicles and tractors, aluminium radiators have become a mainstream component in the automobile cooling industry.

Automobile air conditioning units were considered as optional equipment when purchasing a car, only found in luxury models before the 1980s. After the mid-1980s, air conditioning became more popular since the consumer market was growing more affluent. Many basic models came to be equipped with it as a standard feature and consequently air conditioning condensers were being mass-produced with aluminium material. The aluminium air conditioning condenser will increase capacity for dissipating heat has benefited the driver and passengers comfort, reduced the weight of the car, and improved energy efficiency. The full use of aluminium in both radiators and the application of air conditioning condensers in automobile heat and cooling system, as seen in Figure 7.6 below, have become widespread in the industry since the 1990s. During the late 1980s, Chinese radiator and condenser factories converted to using aluminium materials and related equipment as Western and Japanese technology were introduced into China as a result of the emergence of the JVs.

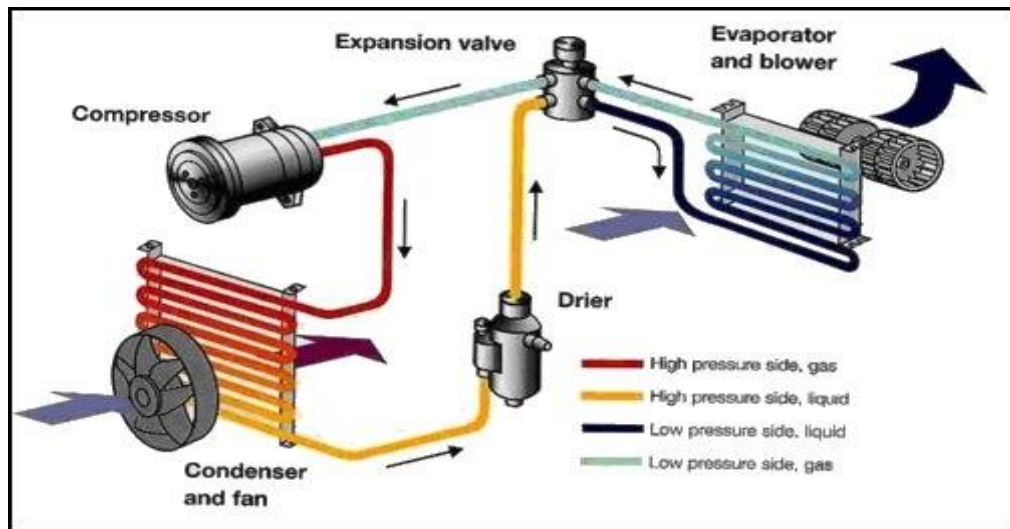


Figure 7. 6. Air conditioning condenser in cooling system²⁹¹

7.2.3. Composite halogen headlamps

Since the 1940s all cars on the road were required by government to have sealed beam headlights installed; this regulation lasted for almost 40 years until the beginning of the 1980s. As illustrated in Figure 7.7, the conventional sealed beam used during this period was a homogeneous type of automobile lamp that included a reflector and filament as a single unit light assembly. The sealed beam meant that the reflector, lens and bulb are all

²⁹¹ This picture of an air conditioning condenser is downloaded with the approval of Pacific Best Inc, Los Angeles, California USA. ANON., 2005, 'Picture of the Air Conditioning Condenser', <<http://www.pacificbestinc.com/cataloginfo.asp?cat=2>>, accessed 28 February 2008.

incorporated into one part. The filament works in a vacuum, and when it burns out, or in the event of a crash, the sealed beam as one single unit stops functioning and must be replaced entirely.

In the 1970s many European car makers used decorative and protective elements in front of the headlights so the styling design became more flexible. Such models could be seen in the Jaguar E-type, the Porsche 356 and the Citroen DS. However, the USA's Department of Transportation prohibited such use because it causes dimness of the headlights. The National Highway Transportation and Safety Agency (NHTSA), working under the Department of Transportation, even set up minimum standards for the headlamps used in the USA. This law became so stringent that European car manufacturers had to alter the appearance of European models to be sold in the USA, and vehicles designed for an aerodynamic low drag coefficient could not be marketed in the USA market.



Large round sealed beam (7 in.)



Small rectangular sealed beam (6½ in. x 4 in)



Small round sealed beam (5 in.) Large rectangular sealed beam (7½ in. x 5½ in.)²⁹²

Figure 7. 7. Conventional sealed beam headlamps

The sealed beam headlights used before the 1960s were either in a large (7 in.) or small (5 ¾ in.) round shape: the large was for the high beam, and the small was for the low beam. In 1961, rectangular large (7½ in. x 5½ in.) and small (7½ in. x 5½ in.) sealed beam lights were introduced as an add-on choice required by the USA federal government. Again the large rectangular was for the high beam and the small for the low beam when night driving. By the 1980s all the cars on the road were equipped with either round or square sealed beam lights in both large and small sizes. The advantages of sealed beam lights are that they are simple, standard, easy to replace, and relatively cheap once in mass production. However the disadvantages are manifold when

²⁹² These pictures of seal beams are downloaded with the approval of Pacific Best Inc, Los Angeles, California, USA. ANON., 2005, 'Picture of Seal Beams',
<<http://www.pacificbestinc.com/cataloginfo.asp>>, accessed 28 February 2008.

compared to the modern composite halogen headlamp. First, as the lens is made of glass the sealed beam tends to break easily when hit by stones, rocks and hard objects during driving. Once the lens is broken, air enters the vacuum compartment of the headlamp, destroying the filaments and causing the outage of light. It is unsafe when one of the lights fails when night driving, confusing oncoming traffic into thinking that the vehicle is a motorcycle. Car engineers designed an additional headlamp cover to protect the sealed beam and prevent the sudden malfunction of the headlamp, but its use was rather limited.

The strict USA legislation began to be relaxed when NHTSA adopted Ford's proposal for aerodynamic headlamps with polycarbonate lenses and transverse-filament bulbs in the early 1980s. Automakers began to find ways to ensure the headlamps still functioned when the lens, made of glass or polycarbonate, was broken. In 1984 the first car that adopted the composite halogen headlamp was the Continental Mark VII from Lincoln, a Ford division in the USA. The composite headlamp, as illustrated in Figure 7.8, is not a sealed beam but a part consisting of a halogen lamp and reflector, with a separate plastic lens and mounting brackets that support the lamp. The headlamp on the Continental Mark VII was neither round nor rectangular, but a much larger square type on each side

with a tiny grille in the middle, giving a new look that attracted the attention of participants in the market.



Figure 7. 8. Composite headlamp assembly²⁹³

Composite halogen lamps have several advantages over the previous sealed beam headlights. First, since it is a composite part and the light bulb is a part itself, the headlamp still works even if the lens is broken. This increases the level of safety. Second, the headlamp does not need to be a standard shape as long as the light bulb inside the headlamp and the reflector behind the light bulb combined produce a photometric level that covers the front traffic and meets the standard set by the Society of

²⁹³ This picture of a composite headlamp assembly is downloaded with the approval of Pacific Best Inc, Los Angeles, California USA. ANON., 2005, 'Picture of the Composite Headlamp Assembly', <<http://www.pacificbestinc.com/cataloginfo.asp?cat=12>>, accessed 1 March 2008.

Automotive Engineering, a government-appointed agency. Third, the change in headlamp design gives greater flexibility in the overall car design. The shape of the headlamps can be round, rectangular, oval or triangle, so they can be blended in with any front body panel, increasing the number of options available to car designers.

The development of composite halogen headlamps has led to further advanced research into the xenon light bulb and ballast, and the xenon headlamp, as illustrated in Figure 7.9 and Figure 7.10, which provides high intensity discharge lighting. Unlike halogen incandescent headlamps, its light source comes from electrical discharge between two electrodes in a microenvironment of xenon gas. The elements and compounds of the gas are sealed in a tiny quartz capsule, and through a calculated slow release of gas the light is emitted, formed and sustained between the two electrodes. The blue-white light is about three times brighter than the halogen headlamp and can sometimes dazzle oncoming traffic. Currently xenon high intensity discharge lighting is found mainly in high-end models due to its high production cost. Governments in the USA and Europe are also reviewing whether it is over-bright for human eyes, and evaluating its effect on car accident rates. There has also been improvement in tail lamps and braking lights as well, such as the LED (light-emitting diode), which also increases the photometric level

at the rear end of the car. The composite halogen headlamp has led the way in automotive lighting, benefiting general driver safety, the public in energy saving, and car manufacturers in designing creative styles. It is one of the most important innovations in the car industry since the 1980s. In the low-end and mid-range priced vehicles made in China, composite halogen headlamps were adopted in the 1990s, while the xenon high intensity discharge lighting was only equipped in the high-end vehicles produced by JVs, or being brought into China by their foreign auto partners.



Figure 7. 9. Xenon light bulb and gas ballast²⁹⁴

²⁹⁴ This pictures of a halogen light bulb is downloaded with the approval of Hella USA. ANON., 2004, 'Pictures of the Light Bulb for Halogen Headlamp and Composite Headlamp Assembly', <<http://www.myhellalights.com/bulbs/index.html>>, accessed 4 June 2009.



Figure 7. 10. Comparison between Xenon High Intensity Discharge and Halogen headlamp photometric²⁹⁵

7.2.4. Automotive Navigation System

When the first global GPS satellite (as illustrated in Figure 7.11) was used in 1978, it was not for civilians. However, in 1983, after a Soviet Union interceptor aircraft shot down a Korean airliner in restricted Russian airspace, killing all 269 people on board, President Ronald Reagan decided to let the GPS system be used as ‘Common Goods’ for civilian applications. In 1994, a complete constellation of 24 satellites was then put into use in orbit around the globe. Under the Clinton administration, GPS was allowed to be a dual-

²⁹⁵ This comparison of xenon High Intensity Discharge and Halogen Headlamp Composite assembly are downloaded with the approval of Hella USA. ANON., 2004, 'Comparison between Xenon High Intensity Discharge and Halogen headlamp photometric',
<http://www.myhellalights.com/bulbs/Hella_High_Performance_Xenon_Yellow_Bulbs.html>,
accessed 10 February 2008.

use system and the Interagency GPS Executive Board, a Federal agency in the USA, was established to manage it as a national asset.

Japanese automakers took advantage of this and produced the first GPS-based automotive navigation system in 1990. Followed by American automakers, the GPS became more popular in high-end models and then spread into cargo transporters and family vehicles.

As of today, six regions of the world have developed their own GPS systems: the USA, Japan, Russia, the EU, China and India. Each system has a different name, but provides essentially the same function as positioning technology.



Figure 7. 11. Navigation system²⁹⁶

²⁹⁶ This picture of GPS unit is downloaded with the approval of Lexus, ANON., 'Lexus GPS', <http://www.lexus.com/lexus-share/demos/RX/assets/interior/DVDNav_Gen5_RX/Lexus_nav.html>, accessed 13 June 2009.

GPS was initially used to locate the position of vehicles, and was later developed to guide a driver to a desired destination. With the introduction of technology for location-based services and systems, information about nearby points of interest began to be incorporated into the GPS, making the navigation system more informative and user friendly. The map database further encodes street names and numbers as geographic coordinates so the driver or user can find their desired destination by keying in and searching for the street address. The GPS navigation system allows cars equipped with an electronic receiver to determine their location using longitude, latitude and altitude to within a few metres using radio signals transmitted from satellites.

The format of each car manufacturer's navigation system is invariably proprietary, which means there is no industry standard for the navigation maps. Generally the road database is stored as read-only memory, while media information such as wireless connections like Bluetooth and Wi-Fi are pre-programmed at the factory. Through real-time data, some newer systems can even work with service companies in reporting traffic congestion and suggesting alternate routes to avoid traffic jams guiding a user to their destination. As telecommunication software is improving, navigation systems can have multiple

functions incorporated such as personal information management, DVD entertainment systems, mobile phones and even internet access.

Since driving is still the primary task, safety must be the top priority. Drivers cannot be distracted from their focus on the road with secondary functions also provided by the navigation system. Therefore many programs included with the navigation system will be automatically shut off by the motion of the vehicle, and can only be used when the car is stationary. With sensors to test the distance between the car and stationary objects, the navigation system can assist the driver in parking his car properly or backing up using rear view camera images and interactive information. The sensor in each engine module or part group can inform the driver of the time for maintenance, the wearing situation, and any appropriate recommendations. There are also other significant features such as helping the driver to find the location where he has parked his car, opening the door via radio signal in times of self-lock-in, and tracing the vehicle if it is stolen. As Chinese automakers adopted the new technology in the 2000s, inclusion of a navigation system became common in the Chinese automotive market.

7.2.5. Airbag

During a car crash the driver and front passenger typically endure body injuries worse than the passengers sitting in the rear seats. The introduction of seat belts, as illustrated in Figure 7.13 and also known as a part of the Supplementary Restraint System, by Ford Motor in the 1950s did not solve the problem of injuries resulting from head-on collisions. Often the accident is worse if the driver or passenger is trapped in the seat when a crash occurs. Seat belt technology has gone through many improvements such as two point, three point, automatic, pretensioners and webclamps, yet it is still far from perfect. For instance, smaller children cannot satisfactorily be fastened in car seats and the arm chairs of baby car seats are not compatible with three point seat belts, as shown in Figure 7.12, that are pre-installed with the car. Another disadvantage of seat belts is that many passengers choose not to wear them even when faced with a significant fine and penalty dictated by law.



Figure 7. 12. Three point seat belt as a restraint²⁹⁷



Figure 7. 13. Airbag as a supplementary restraint system²⁹⁸

John W. Hetrick of Pennsylvania, USA, invented the first airbag and patented it in 1952, applying it in airplanes. Between the 1950s and 1980s the airbag was repeatedly tested and marketed without success due to its high defect rate. GM and the Ford Motors experienced many airbag-related incidents and fatalities, and abandoned the project in the late 1970s. Technical problems such as the timing of airbag deployment and the actual protection effect during a crash were not answered satisfactorily. The precise timing of airbag deployment during a crash depends on the reaction of the mechanism built into the triggering system. During an accident the airbag must survive the potentially high temperatures resulting from a fire. The airbag is normally designed to deploy a large

²⁹⁷ *Ibid.*

²⁹⁸ *Ibid.*

cushion in frontal and near-frontal collisions, and therefore cannot deal with any impact from the side or angles that are common in car collisions.

The triggering speeds of airbags are crucial because any off-timing could confer serious injury and even fatality. To calculate the precise timing of deployment the bag requires rigid and serious tests that involve the concepts of physics, chemistry, electrical engineering and human biology. The airbag sensor is made with Micro-Electro-Mechanical Systems technology, combining an actuator and integrated chip into a silicon-substrate unit at the nanoelectromechanical scale, sending a signal to deploy the airbag in response to the sudden deceleration of a car crash. When the airbag is not in use, it must be hidden in the console of the steering wheel, and must interact with the driver only in the event of a crash. It is designed to automatically deploy in the event of a vehicle fire when the temperature reaches 150 degrees Celsius, which ensures that such temperatures do not cause an explosion of the airbag module. The probability of getting injured from the airbag impact must be calculated with sufficient sampling statistics from real-world crashes. Injuries like abrasion of the skin, head damage, eye injury in spectacle users, or breaking of the nose and fingers can occur when the airbag deploys. Other considerations have also been taken into account; for example, smoking during

driving is also dangerous because the compressed air in airbag unit could be ignited to explosion during the accident.

In the 1980s almost all the major automakers started to produce cars with airbags, calling it Supplemental Restraints System (SRS). It is a device considered to assist the existing three point seat belts for occupants. In 1984, the USA Department of Transportation made it mandatory for cars produced after 1 April 1989 to have a driver-side airbag. The federal agency in the USA, NHTSA, further regulated that both driver's and passenger's airbags must be installed on all new passenger cars. Following automakers' research and offers, the side airbag on the door panel was also introduced and sold as an additional feature to enhance safety.

Because vehicle speed and damage are not good parameters of whether an airbag should be deployed, the sensor of an airbag must measure deceleration before the gas inflation. Many incidents and injuries have been caused by the deployment of airbags: reasons include the wrong timing of deployment, defective parts, and malfunctioning detonation. The reliability testing of airbags has continued for more than two decades since their application in the 1980s, and is still undertaken by both government agencies and manufacturers. Advanced airbag technology has been developed to adapt the response to

the severity of the crash, the size and position of the passenger, and the distance between the passenger and the sensor module with multiple-stage inflators that deploy with various degrees of force. The sensor can diagnose whether the occupant of the seat is an adult or a child and whether a seat belt or child restraint is being used, and based on severity information the airbag is deployed at appropriate forces or after no force at all.

Chinese indigenous automobile factories, as we saw in chapters 4 and 5 have adopted most of the above-mentioned technologies in their production of some models. Based on specifications of the models selected from the Chery and Geely production lines which are listed as Table 7.4, Chinese automobile products are more than just a means of transportation. Chinese automakers and component suppliers have offered, like global automakers, the utility, efficiency, convenience and safety of the five technologies discussed in their vehicle products that are relevant to building costs and selling prices.

Table 7. 4. Capacities of five representative Chinese indigenous companies in the tested five technologies applied to their top models²⁹⁹

²⁹⁹ Interview # 2, Chery Interview # 1, Geely Interview # 3, BYD Interview # 4, Great Wall Interview # 6, BCA The author of this thesis has compiled and edited sources, based on the interviews with these five companies.

Domestic Manufacturers	Top Model	Front and rear Polyurethane bumpers	Aluminium radiator and air condition condenser	Composite headlamp assemblies	GPS navigation system	Airbag (Driver)	Airbag (Co-Driver)
Chery	Estar 1.8/2.0	Yes	Yes	Yes	No	Yes	Yes
Geely	Vision 1.8 (Commercial Type)	Yes	Yes	Yes	Yes	Yes	Yes
BYD	BYD F6 2.4 (Automatic, GS-i Navi)	Yes	Yes	Yes	Yes	Yes	Yes
Great Wall	GWPERI 1.3	Yes	Yes	Yes	No	Yes	Yes
BCA	Grandeur	Yes	Yes	Yes	No	Yes	Yes

Table 7. 5. The classification of Chery and Geely's suppliers in the tested five technologies (2007)³⁰⁰

(F: Foreign; JV: Joint Venture; D: Domestic; NA: Not available)

	CHERY		GEELY	
BUMPER COVER	Wuhu Youth Tongyang Auto Plastic Parts Co.,Ltd.	JV D	Zhejiang Yiming Shiye Ltd.	D
RADIATOR / CONDENSER	Qingdao Auto Radiator Co.,Ltd,Shandong Houfeng Radiator Company.,Ltd,Changchun Allied Aluminium Radiator Co., Ltd,Wuhu Bonair	JV & D	Qingdao Auto Radiator Co. Ltd, Shandong Houfeng Radiator Co. Ltd. Xintian Group Co. Ltd, Yuxin air Conditioner Co. Ltd.	D D JV & D

³⁰⁰ Interview # 10, Component suppliers Manufacturing in Shanghai, Wenzhou, Taian, Chendu, Tianjin, Ruian, July 2007 - June 2009 The author of this thesis has made this table based on interviews with Chery and Geely's suppliers.

	Automotive electrical System Co.,Ltd			
HEADLAMP	Shanghai Koito Automotive LampCo.,Ltd,UTAS-NOVA Automotive Lighting System Co., Ltd	JV & D	Shanghai Koito automotive lamp co.,ltd,UTAS-NOVA Automotive Lighting System Co.,Ltd.	JV & D
AIR BAG	East Joy Long, Jinzhou Jinsheng Automotive Safety System Co.,Ltd	D	East Joy Long, Jinzhou Jinsheng Automotive Safety System Co.,Ltd	D
NAVIGATION SYSTEM	Shenzhen Lianhe Shiye Ltd	D	NA	

As illustrated above in Table 7.4, most indigenous factories can build their vehicles with the five tested technologies discussed in this chapter. The only exception is GPS as equipment that is offered to customers as an option feature, which factories such as Great Wall and Brilliance Auto choose not to include. Table 7.5 shows where the leading indigenous automakers, Chery and Geely, obtained and purchased the five primary components. Most are from domestic suppliers. Some of them, such as composite headlamp assemblies, were provided by JVs and a smaller amount of domestic component suppliers, according to their impact on price, quality and manufacturer's supplying capacity.

The most difficult challenge for the Chinese automobile industry is to seek control of over development of the heart of the vehicle: the engine. Depending on engine

performance efficiency, each model's other components and modules must vary and affect the vehicle design. As will show in the next section, although the Chinese automotive industry has been outstanding in its expansion and growth since the 1980s, it is still young in learning how to build engines of vehicles to develop efficient models.

7.3 Building and accumulation of core technology

Making vehicles requires the integration of various primary technologies such as the chassis, body panels, engine, transmission and electrical system. However, the vehicle is not just a module that combines various matching components from respective providers, nor is it assembled based on blueprints and technology provided by component suppliers. The manufacturing of quality cars requires continued accumulation of skills and technology, rather than just obtaining knowledge about essential components, like a cook acquiring ingredients for a recipe. Moreover, it takes experimental tests and time to fine-tune the engine technology, to build related parts around the engine and ultimately, to ensure a level of quality and durability that can consistently be put into application.

To examine the growth of the core technology in the Chinese car manufacturing industry, one must first understand how the heart of a vehicle functions. The engine, transmission

and suspension are normally considered the three most sophisticated constituents of a car that determine the value, function, and performance of a vehicle. In a recently-developed country like China where relatively low GDP per capita is still a major determinant of the purchasing power of car buyers. Value of a passenger vehicle is transport for the bus and train, its production was focused on consumer affordability and manufacturing efficiency, rather than luxury amenities.

The making of the automobile transmission in both automatic and manual-shift vehicles is subject to the size of the engine, road conditions, and vehicle selling price and performance requirements. The automatic transmission costs more to build because of the complexity of the torque converter used in the construction of the gears to replace the conventional clutch. In European and Asian countries, smaller engines are more often adopted so the manual transmission is commonly used because of cost considerations.

The making of the automotive suspension system of springs, shock absorbers and linkages that connects a vehicle to its wheels is conditional on the power of the engine, the car weight, the road handling and the comfort level of passengers. For instance, the sports cars made by companies such as BMW or Porsche have been known for their racing performance and reliable road handling. The suspension engineering of the

developed car industry is the most difficult aspect to imitate for other less advanced automakers, especially in developing countries, due to the intricacy of engineering design and the substantial costs involved in R&D. In the area of transmission, China's auto industry has adopted the manual rather than automatic systems. Chinese automakers seemed to have chosen to use the simplest suspension version in their manufacturing to save costs. Although the automatic transmission has been adopted, as of 2007, 74 percent of vehicles produced in China still used manual transmission.³⁰¹ Designing a modern automobile engine draws on many areas of engineering: thermodynamics and combustion, fluid mechanics and heat transfer, mechanics, stress analysis, materials science, electronics and computing.³⁰² In theory, the making of the internal combustion engine is subject to the development cost, types of fuel to be used, and the development of alternative power plants.³⁰³ Automakers have to face more issues than just the number of cylinders, engine displacement, compression ratio, fuel consumption and other

³⁰¹ Zhongshang Qingbao Wang, April 2009, ANON., 2009, Zhongshang Qingbao Wang '2009-2010 Zhongguo Qiche Biansuqi Hangye Fazhan Fenxi ji Touzi Zixun Baogao, 2009-2010 年中国汽车变速器行业发展分析及投资咨询报告 (Report on Development of Chinese Automobile Transmission Industry)', <<http://www.askci.com/reports/2009-04/200941711212.html>>, accessed 6 June 2009.

³⁰² Stone, Richard, *Introduction to Internal Combustion Engines* (Third edn.; London: Palgrave Macmillan, 1999). Page xi.

³⁰³ *Ibid.*, pages 16-17.

mechanical design considerations. Modern automakers must deal with government regulations regarding engine emissions and commercial considerations such as the availability of technology for an engine, its building cost in relation to its selling price, and the marketability of vehicle models that adopt such an engine. While alternative fuels such as the fuel cell and ethanol, and power plants, such as hybrid and electrical have been under development, gasoline-fuelled engines are still viable and continue to improve in performance and efficiency. To save on the cost of development, experienced automakers improve on existing engines that have been proven to be sustainable in the market place. However, for Chinese indigenous automakers, sourcing and making new engines has been the most difficult task.

Since 1998, the entire production and sales of vehicles in China has undergone exceptional growth, at a rate of nearly 20 percent per annum, but production of engines by Chinese automakers, both JV and indigenous, has not met the need. As shown in Figure 7.14 below, both engine and vehicle production had a steady growth from 1998 to 2007. However, the ratio of engine to vehicle production is approximately 90 percent.³⁰⁴

³⁰⁴ Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2007*, 中国汽车工业年鉴 2007 (China Automotive Industry Yearbook 2007). Page 462, Pages 462-448, and Zhongguo Qiche Gongye Xiehui (ed.), *Zhongguo Qiche Gongye Niandu Baogao 2008*, 中国汽车工业年度报告 2008, Annual Report on Automotive Industry in China 2008. Page 290.

The 10 percent gap reflects a shortage of approximately one million diesel and petrol engines. With the exception of Chery and Geely, who developed their own engines to some extent, most indigenous automakers produced cars as ‘assemblers’ and must outsource from other suppliers the balance in the shortage of engines.

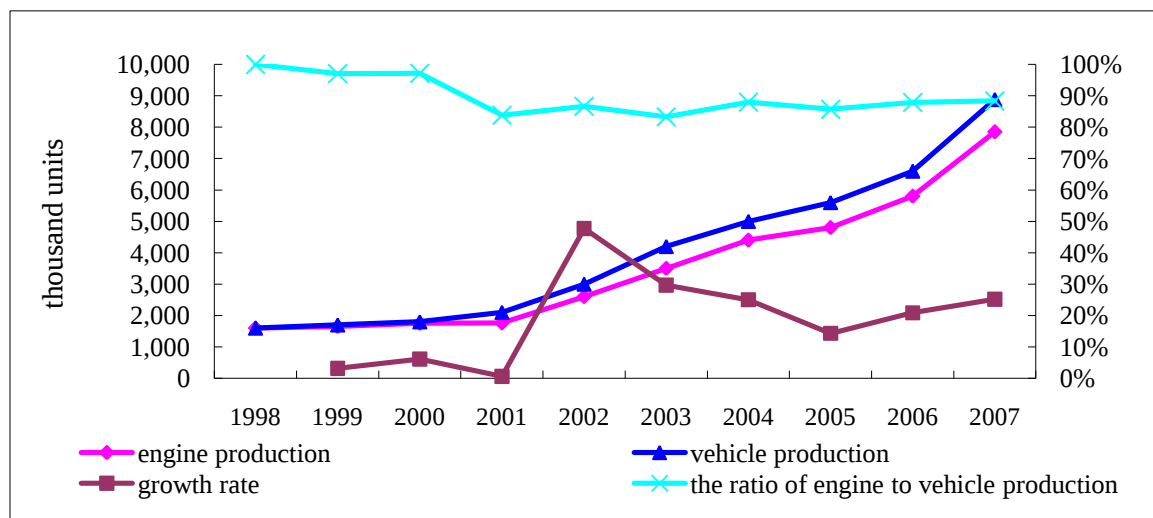


Figure 7. 14. China’s vehicle and engine production and growth rates, 1998-2007³⁰⁵

By 2007, Chinese automakers, mostly JVs, had established 59 combustion and diesel engine factories, both JV and indigenous, which were registered in the nation’s

³⁰⁵ The author of this thesis has made this figure through the combined reference from Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2007*, 中国汽车工业年鉴 2007(China Automotive Industry Yearbook 2007). Engine Production, Page 462; Vehicle production, Page 448. Zhongguo Qiche Gongye Xiehui (ed.), *Zhongguo Qiche Gongye Niandu Baogao 2008*, 中国汽车工业年度报告 2008, Annual Report on Automotive Industry in China 2008. Page 290.

manufacturing catalogue. The total production and sales of engines were 7.85 million and 7.7 million units respectively, with petrol combustion engines taking 75 percent and diesel the remaining 25 percent. The market structure of the engine was divided into two parts: in the combustion engine sector the top five JVs: GM-Liuzhou Wuling, Ford-Changan, VW-FAW, VW-SAIC, and Honda-Guangzhou took the lead in producing more than 2.1 million units, or 36 percent of the entire production of the 35 factories in the period between 1998 and 2007. The entire JV's engine production was a dominating 82.25 percent.³⁰⁶ In the diesel department of the same period, the first five factories are also JVs, producing 1.3 million units, or 67 percent of the entire production of the 25 factories. It is clearly evident that the JVs have dominated the combustion engine production and market in China. The Chinese indigenous automakers had only a minority control of the engine market and must rely on outsourcing engines to meet their production demand.

Without sufficient capital and technology over the past decades China has been behind in the development of engine building, despite its entire production of vehicles reaching third place in the world ranking in 2007. Up to 2007, all the multinational automakers

³⁰⁶ Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2008*, 中国汽车工业年鉴 2008 (*China Automotive Industry Yearbook 2008*). Page 486.

had established engine factories in China through the establishment of JVs, with a few exceptions such as Mercedes-Benz and BMW, which imported the CKD engine modules into China for assembly. For the indigenous Chinese auto firms, finding an appropriate engine for their domestically-designed model had not been easy. Government policy and high import duties prohibited or discouraged Chinese automakers from importing engines as vehicle assemblers. The demand for engines was high because of there being no engine supplier for those indigenous automakers who could not build their own. As will be seen in Section 7.4, Mitsubishi Motors Corporation, the Japanese automaker which wished to sell its engines as separate products from cars found this niche market and filled the void of demand for the Chinese indigenous automakers.

Domestically, only Chery and Geely independently developed their own gasoline combustion engines, but they did not produce enough of them. Their engine production reached 445,944 units in 2007, representing 5.68 percent of total engine production in the whole country. However, this figure is still less than their demand and they had to rely also on purchasing engines from Mitsubishi Motor Corporation's JV in China. As seen in Figure 7.15, the total of engines made by both JVs and indigenous automakers Chery and Geely amounted to close to 7,850,000 units. In other words, as of 2007, the majority,

close to 7.4 million units of the engines needed for vehicle production were produced and controlled by foreign JVs in China.

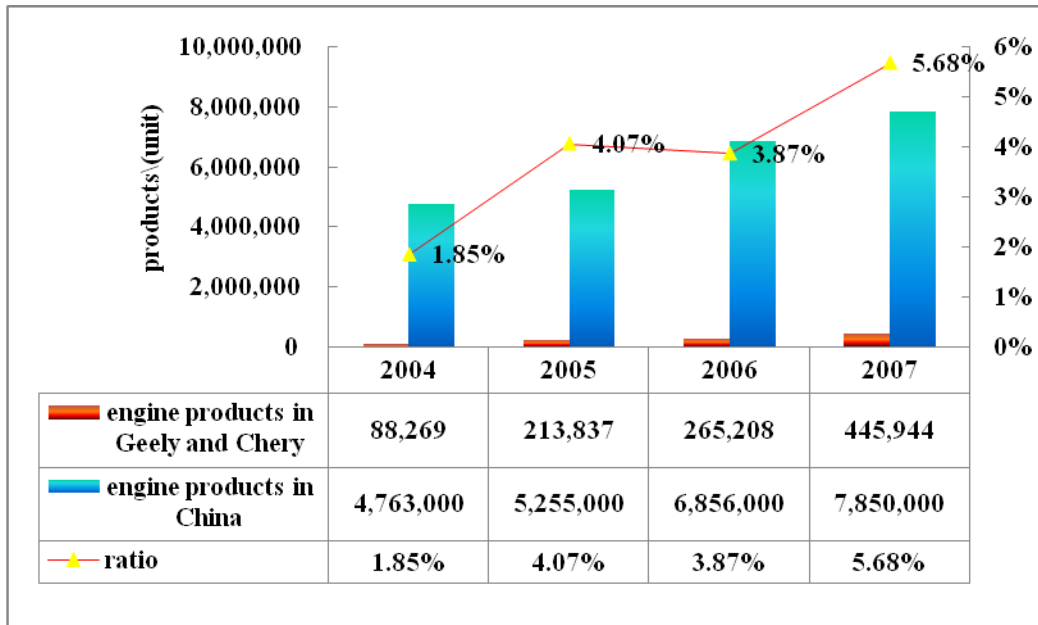
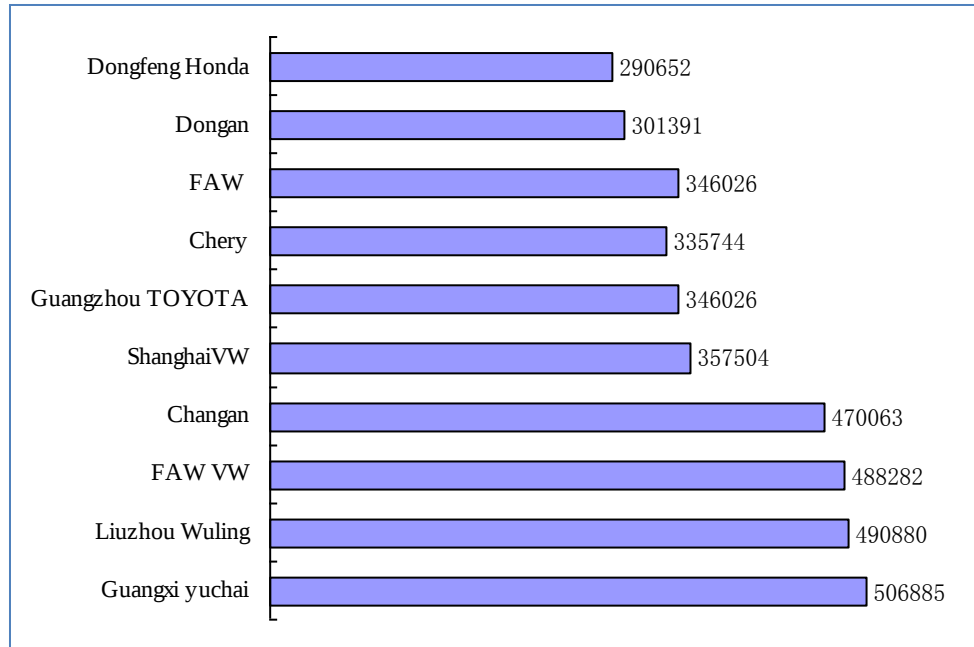


Figure 7. 15. Comparison of engine production between Chery and Geely and the total number of Chinese companies, 2004-2007³⁰⁷

³⁰⁷ The author of this thesis has combined and edited the sources from Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2005*, *中国汽车工业年鉴 2005* (China Automotive Industry Yearbook 2005), Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2006*, *中国汽车工业年鉴 2006* (China Automotive Industry Yearbook 2006), Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian 2007*, *中国汽车工业年鉴 2007* (China Automotive Industry Yearbook 2007). 2005, Page 491, 2006, Page 517, 2007, Page 461 for the source of the engine production of Geely, and Page 462 for the engine production of Chery.



**Figure 7. 16. The ten leading engine manufacturers in China
(combustion and diesel), 2007³⁰⁸**

As shown above in Figure 7.16 above, Chery's engine production ranked seventh in national combustion and diesel engine making in 2007, and fifth in the combustion engine category. But it had cemented first position among the indigenous companies.³⁰⁹

³⁰⁸ Zhongguo qiche gongye xiehui, (Chinese Automobile Industry Association), official web link, 16 February 2008, ANON., (2009) 2008 Zhongguo Qiche Fadongji Paiming, 2008 年中国汽车发动机排名 (Chinese Engine Product Sales Ranking 2008), <<http://www.icandata.com/data/199911/1130H34Gc9.html>>, accessed 16 February 2009.

³⁰⁹ The first two manufacturers, Liuzhou Wuling and Guangxi Yuchai, are producers of diesel engines used in trucks and buses. The next four, FAW-VW, Changan-Ford/Mazda/Suzuki, Shanghai-VW, and Guangzhou-Honda, are JVs.

Geely's production in 2007 did not exceed 100,000 units and yet it still ranked second amongst the indigenous auto factories. At the time of writing, Geely has produced only the straight four-cylinder engine while Chery has developed both four-cylinder and six-cylinder engines.³¹⁰

In 2004, Chery built its first engine plant and manufactured the Chery Automobile Corporation series SQR, SQR372 and SQR472, for its model 'QQ' and Qiyun with the technology outsourced through the Austrian engine-design company AVL. With the same technological support in 2006, Chery's second engine factory was established and the series ACTECO started to take form. SQR481F and SQR484F were employed in their models Eastar and Chery A5 and by June 2007. Both of the engine factories produced more than 185,000 units in the first half of 2007, as illustrated in Table 7.6.

Table 7. 6. Production of Chery's engine models, 2004-June 2007³¹¹

³¹⁰ Interview # 1, Geely Interview # 2, Chery

³¹¹ The author of this thesis has combined and edited the sources from '*Zhongguo Qiche Gongye Nianjian*, 2005, 2006 and 2007 (China Automobile Industry Yearbook 2005, 2006 and 2007): The source of models products of Chery: 2005 Page 518, 2006 Page 543, 2007 Pages 488, 667; The source of the total engines production of Chery.; 2005 Page 491, 2006 Page 517, 2007 Page 461.

Engine models	Vehicle models	Engine displacement	Product in units			
			2004	2005	2006	June 2007
SQR480	Qiyun, Karry	1.6L	19013	56874	103333	54750
SQR372	QQ	0.8L	20898	78297	104434	35461
SQR472	QQ	1.1L	—	—	22546	39263
SQR484F	Easter、A5、V5	2.0L	—	—	13086	20961
SQR481F	A5	1.6L	—	—	19143	34597
Total			39911	135171	262542	185032

In 2002, Geely produced its first self-developed MR479 engines with 1.3 litre displacement, and used it in six models.³¹² The engine performance parameters and specifications were very similar to Toyota's engine A8 series with a few modifications; Geely did not deny imitation. Similarly the 1.0 Litre engine JL376 originated from FAW Tianjin Xiali's engine TJ378Q, then a product of Japan's Daihatsu which later merged with FAW, and was adopted by Geely in its microcar models such as Youliou, Meiri, Haoqing SRV and Haoqing (as seen in Table 7.7). In 2006, Geely further developed its second self-developed engine the 'JL4G18', and claimed it a better model, with variable valve timing technology. It was put in Geely's flagship model 'Vision'. As explained in sections 4.2 and 4.3 of Chapter 4, between 2004 and 2007, Geely's engine production

³¹² Interview # 1, Geely

could only meet approximately 50 percent of the requirement of its vehicle production, and Chery also experienced a shortage of engine production at between 53.9 percent and 11.88 percent. This drove both Chery and Geely, together with those indigenous automakers that did not produce engines, to rely on outsourcing engines.

Table 7. 7. Geely's engine products, 2004-June 2007³¹³

Engine models	Vehicle models	Engine displacement	Product in units			
			2004	2005	2006	June 2007
JL376QE	Youlio, Meiri, Haoqing SRV, Haoqing	1.0L	28354	47620	21429	4756

³¹³ The author of thesis has combined and edited the sources: *'Zhongguo Qiche Gongye Nianjian*, 2005, 2006 and 2007 (China automobile industry yearbook, 2005, 2006, and 2007). For the source of models products of Geely: 2005 Page 518; 2006 Page 543; 2007 Pages 488, 666-667; for the source of the engines total production of Geely: 2005 Page 491; 2006 Page 517; 2007 Pages 461, 662.

JL378QE	Youlio, Haoqing SRV, Haoqing	1.1L				
MR479Q	Ziyoujian, Meiri New, Haoqing 300, Maple, Meirenbao, Youliou	1.3L	20004	31046	60608	23408
MR479QA	Ziyoujian, Haoqing SRV, Meirenbao, Maple, Marindo, Meiri New	1.5L				
MR481Q/MR48 1QA	Jingang、Meirenbao	1.6L	—	—	17034	20741
JL4G18	Vision	1.8L	—		3595	6195
Total			48358	78666	102666	55100

7.4 Borrowed engine technology

The Chinese indigenous companies found it difficult to compete with the JVs for several reasons. First, the JVs continued to introduce more advanced and sophisticated models from the existing product line of their foreign partners. Second, the JVs were much stronger financially than the domestic Chinese indigenous companies which were not well capitalised. Third, the JVs had more favours from Chinese government policy to protect the territory of their market. Fourth, and probably the most important factor, the JVs had continuing support in terms of engine technology from their MNCs partners. The indigenous firms, on the other hand, could not develop their own engine technology

quickly enough to meet the demand and consequently, they had to build cars with borrowed engine technology instead of risking using self-developed engines that might not work economically.

In competing in the Chinese market Mitsubishi Motor Corporation (MMC), the sixth largest automaker in Japan, has deployed a different market strategy to its rivals such as Toyota, Nissan and Honda. Since the 1990s MMC has built up a wealth of experience in engine building, despite its automobile sales not being the strongest in Japan. In China it went into JVs with Hunan Changfeng Motors and Southeast Motors to build cars, but it did not capture much of the Chinese market share. In addition to building and selling cars, it also focused on manufacturing and marketing its engine products to Chinese indigenous factories that found them attractive. Most Chinese indigenous factories such as Chery, Geely, Hafei, BYD, Brilliance Auto and Great Wall adopted Mitsubishi's engine and transmission.

The story started in 1992 when some state and military enterprises were transferred into commercial businesses. MMC seized this opportunity by obtaining a manufacturing permit from the Chinese government to form JVs to produce engines. Under the 1984 automotive guidelines, this was far from breaching the 50/50 percent ownership rule in

building an automotive engine factory because MMC did not even own 40 percent. Shortly afterwards it formed a JV with China Aviation Industry Corporation and China Aerospace Automotive Group Corporation in Harbin, Heilongjiang Province, to produce an engine developed by Mitsubishi. The two new JVs were established, named SAME and Dongan Aviation Enterprise (DAE), and set up to construct various types of Mitsubishi's 4G engines. The former was projected to make engines with displacement larger than 2.0 Litres. The latter was to produce engines with displacement smaller than 2.0 Litres. As shown in Table 7.8, Mitsubishi's 4G engines manufactured by DAE and SAME, though using somewhat outdated technology, were widely adopted by domestic factories such as Chery, Geely, BYD, Hafei and BCA.

Table 7. 8. Mitsubishi 4G series engine used in Chinese indigenous automakers' models³¹⁴

JV with Mitsubishi	Engine model	Displacement	Chinese Indigenous Automaker	Applied model
Dongan Automobile Engine (DAE)	4G13	1.3L	Zhongtai	Zhongtai 2008
			Hafei	Hafei Saima
	4G15	1.5L	Hafei	Hafei Luzun
	4G18	1.6L	BYD	BYD F3
			Brilliance	Brilliance Junjie
			FAW Haima	Haima Family

³¹⁴ Xici Hutong, Nanjing, 9 January 2008, ANON., 2008, Xici Hutong 'Shiyong Butong Sanling Fadongji de Chexing, 使用不同三菱发动机的车型 (Models Used with Mitsubishi Engines)', <<http://www.xici.net/b1092008/d86169099.htm>>, accessed 17 May 2009.

	4G93	1.8L	Hafei	Hafei Saibao3\Hafei Saibao5
			Zhongtai	Zhongtai2008
			Brilliance	Brilliance Junjie 1.8L
			Hafei	Hafei Saibao5 1.8L
Shenyang Mitsubishi (SAME)	4G63	2.0L	Brilliance	Brilliance Junjie2.0L\Grandeur
			Chery	Chery Tiggo2.0L
			Dongnan	Dongnan Lingyue\ Lingdong
			FAW	FAW Ziyoufeng2.0L
			Tianma	Tianma 2.0L
	4G64	2.4L	Chery	Chery Easter Cross\ Chery V5
			Hafei	Hafei Saifu
			Zhongxing	Zhongxing Landmark
			Shuanghuan	Shuanghuan CEO
			FAW	FAW Ziyoufeng2.4L
			Tianma	Tianma2.4L
			Shuanghuan	SG AURORA
			Changfeng	Changfeng Liebao
			Great Wall	Great Wall HoverCUV
			Dongnan	Dongnan Space Wagon\ Gallant

From 2000 onward, the two Mitsubishi JVs' factories began to produce large volumes of engines and marketed them in China. Both DAE and SAME's production capacity was soon absorbed by China's fast-growing automobile companies, especially those 'gai zhuang che' (vehicle modification) companies that did not produce their own engines. As shown in Figure 7.17 below, the Mitsubishi 4G engine was used in between 21.19 percent to 31.29 percent of the cars produced by the Chinese indigenous auto factories during the period 2004 to 2007.

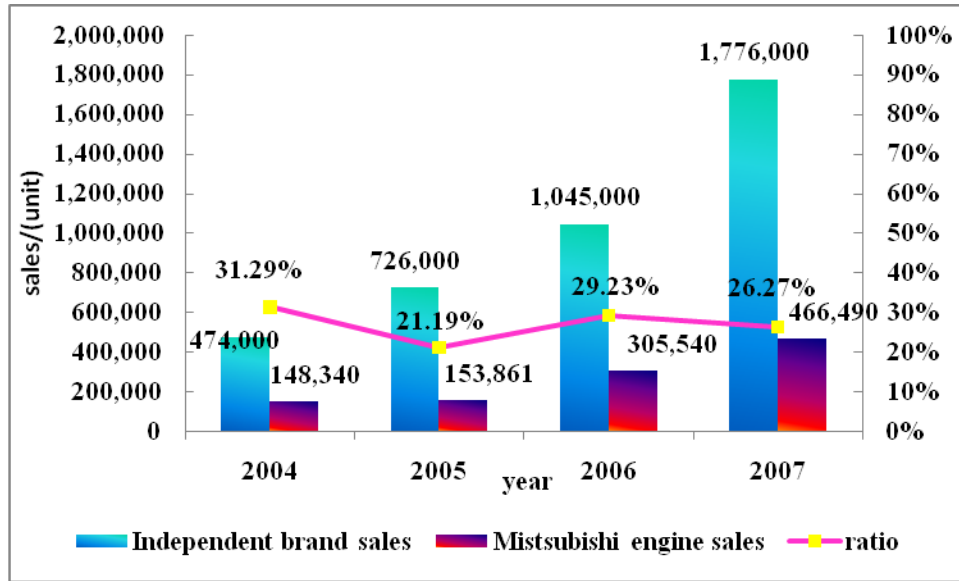


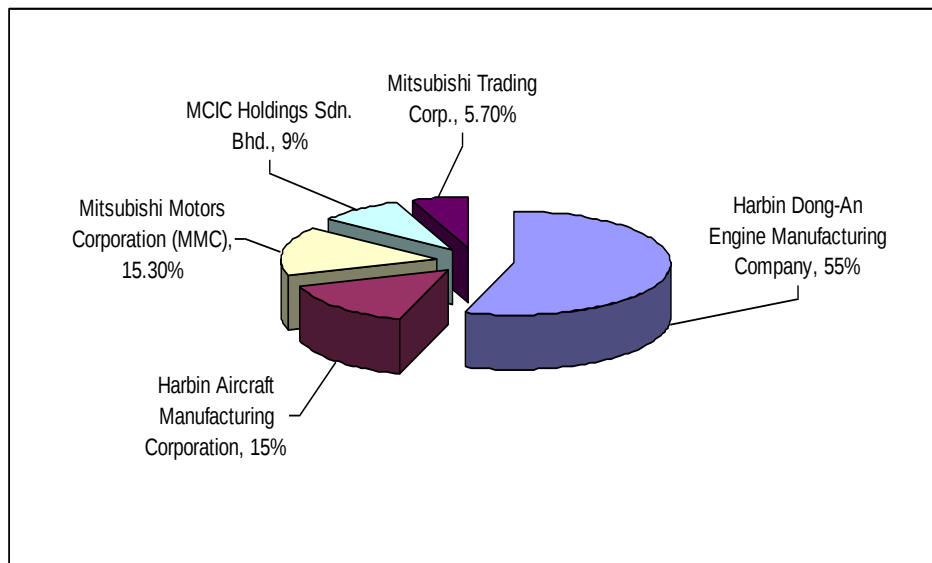
Figure 7. 17. Mitsubishi engine sales and indigenous brand vehicle sales, 2004-2007³¹⁵

(Mitsubishi engine sales = DAE sales+ SAME sales)

DAE was formed in September 1998 by MMC, Mitsubishi Trading Company, Harbin DAE Manufacturing Co., Harbin Aircraft Manufacturing Corp., and Malaysia and China Investment Corporation (MCIC). The share percentage as distributed between the

³¹⁵ The author of this thesis has combined and edited 'Zhongguo Qiche Gongye Nianjian, 2005, 2006, and 2007' (China automobile industry year book 2005, 2006 and 2007). For the source of the engine sales of DAE and SAME: 2005 Page 491; 2006 Page 517; 2007 Page 461; For the source of independent brand sales: Guojia Xinxi Zhongxin (National Information Center) and Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2007 中国汽车市场展望 (China Automotive Market Outlook 2007)*. Page 90.

Chinese firms and MMC is shown in figures 7.18 and 7.19. Working under the guidelines of the 1994 Chinese automobile policy, Mitsubishi took 21 percent in DAE and 34.3 percent in SAME.³¹⁶ Even though the Chinese shares in both of these JVs were more than 50 percent, the technology of building the engine and transmission was a part of MMC's intellectual property rights. The Chinese partners might have enjoyed the benefits of the JV as majority shareholders, but MMC still had control of the engine technology and could easily build in their profit into the components or modules used by the JVs that MMC was partnered with.



³¹⁶ Mitsubishi Press Release, ANON., 1998, 'Ceremonies to mark establishment of JV and to commission engine factory in Harbin, China', <<http://media.mitsubishi-motors.com/pressrelease/e/corporate/detail389.html>>, accessed 17 May 2008.

Figure 7. 18. Share percentage of Harbin Dongan Automotive Engine Co., Ltd. (DAE)³¹⁷

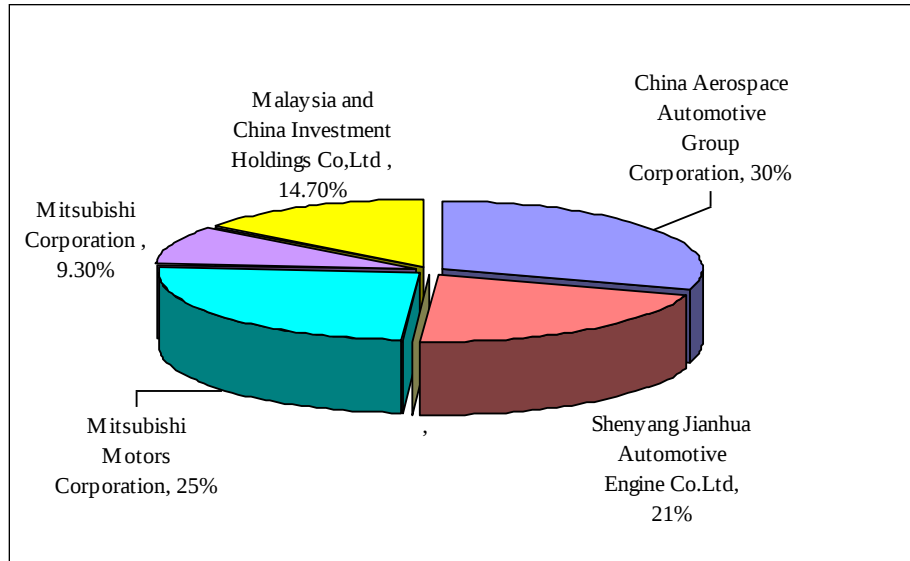


Figure 7. 19. Share percentage of Shenyang Aerospace Mitsubishi Engine Manufacturing Co., Ltd. (SAME)³¹⁸

³¹⁷ ANON., 2001, 'Haerbin Dongan Qiche Dongli Gufen Youxian Gongsi Gufen Biandong ji 2001 Peigu Huo Pei Keliutong Gufen Shangshi Gonggao, 哈尔滨东安汽车动力股份有限公司股份变动及 2001 年配股获配可流通股份上市公告 (The Reorganization of Haerbin Dongan Engine Company Ltd. and Announcement of Distribution of Convertible Share Divident)', <http://share.irj.vnet.cn/cominfo/ggdetail_2001-09-20_600178_50539.htm>, accessed 15 February 2009.

³¹⁸ ANON. Shenyang Hangtian Sanling Fadongji Zhizao Chang, 2008, 'Shenyang Hangtian Sanling Fadongji Zhizao Company Ltd. Gongsi Jianjie, 沈阳航天三菱发动机制造有限公司简介, (Company Introduction of SAME)', <<http://www.same.com.cn/Article/ShowClass.asp?ClassID=3>>, accessed 16 June 2009

According to the JV agreement, MMC was to make a transfer of the engine technology to DAE to produce the 4G1 and 4G9 series engine and transmission, with engine displacements from 1.3 to 1.8 Litres, which would cover the demand for the 14 indigenous Chinese factories including Hafei Automobile in Harbin. Since the Chinese partners in the JV lacked the capacity for their own development, the transfer of engine technology was perceived to be following the design and blueprints provided by their Japanese partner. The Mitsubishi engine's production started in 2002, and grew rapidly as a result of demand from the emerging Chinese market. As seen in Figure 7.20, in 2004, MMC's total production of engines in China was about 40,085 units, but reached 301,391 units in 2007, more than a seven-fold increase.³¹⁹ Compared to the previous year, it was a 100 percent increase and ranked ninth among all Chinese engine producers, including the JV automakers' engine division.

³¹⁹ Zhongguo Qiche Jishu Yanjiu Zhongxin, Zhongguo Qiche Gongye Xiehui (ed.), *Zhongguo Qiche Gongye Nianjian 2005*, 2006 and 2007: 2005 Page 491; 2006 Page 517; 2007 Page 461.

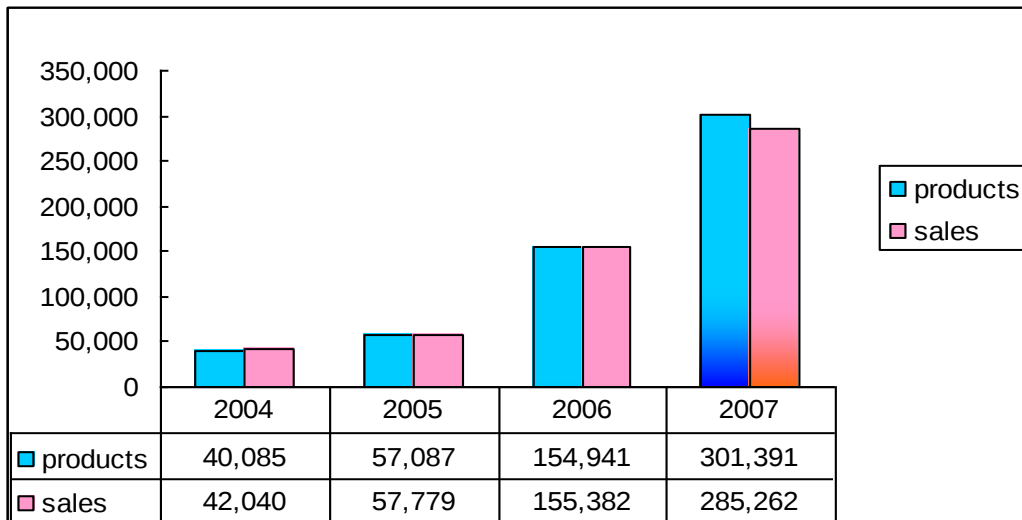


Figure 7. 20. Production and sales of DAE, 2004-2007³²⁰

DAE started to produce the four-cylinder 4G15, 4G18 and 4G93 engines, which were adopted by Chinese indigenous automakers such as Hafei Automobile, Brilliance Auto, BYD Auto Company, and Southeast (Fujian) Motor Corp. These four models were of smaller engine displacement with less than 1.6 Litres, outdated and had relatively low performance with specifications as shown in Table 7.9. However, one of the engines, 4G18 was very popular and came to be adopted by most indigenous automakers. Its

³²⁰ The author of this thesis has combined and edited the data from Zhongguo Qiche Gongye Xiehui Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian, 2005, 2006 and 2007*: 2005 Page 491; 2006 Page 517; 2007 Page 461 for the engine production and sales of (DAE).

production was ranked fourth in the most popular engine list in a national survey in 2006.³²¹

Table 7. 9. Technical data for engines 4G13, 4G15, 4G18 and 4G93³²²

Model specifications	4G13	4G15	4G18	4G93
Max Power (Kw/RPM)	62.5/6000	72/6000	75/6000	98/6500
Max torque (N.m)	107.8	132	136/4500	161 /5000
displacement (litre)	1.3	1.5	1.584	1.834
Cylinder	4	4	4	4

MMC also made progress with its other JV, SAME. In 1997 Shenyang Aerospace Mitsubishi Engine Manufacturing Company was formed by the China Aviation Automobile Corp, Brilliance Auto, MCIC, and Mitsubishi Trading Corp, as a Sino-Japanese JV to manufacture engines with displacement of 2 litres or bigger. It was

³²¹ Interview # 1, Geely , Interview # 2, Chery

³²² ANON., 2006, 'Haerbin Dongan Qiche Zhizaochang Chanpin Zhanshi, 哈尔滨东安汽车制造厂产品展示 (Haerbin Dongan Automobile Factory Product Introduction)', <<http://www.dae.cc/cpzt.asp>>, accessed 17 June 2009 And ANON., 2006, 'Shenyang Hangtian Sanling Qiche Fadongji Zhizao Youxian Gongsi Chanpin Zhanshi, 沈阳航天三菱汽车发动机制造有限公司产品展示 (Shenyang Automobile Manufacturing Enterprise Engine Product Introduction)', <<http://www.same.com.cn/Article/ShowClass.asp?ClassID=8>>, accessed 17 May 2009.

separated from DAE in order to create another opportunity to sell MMC engine technology. By 2006, this engine factory had achieved a capacity to produce annually 150,000 engines for models 4G63, 4G64 and 4G69. SAME did well in its production and sales from 2000 to 2007. As seen in Figure 7.21, the sales of SAME grew almost seven times from 25,198 units in 2000 to 181,228 units in 2007. Through this set up, SAME was able to supply most of the indigenous automakers such as Hafei, Chery and Southeast in their SUV models with engine specifications, as shown in Table 7.10. Out of the three four-cylinder engines types, 4G64 (formerly 491 and 492) was an obsolete and low-end performer used in the late 1970s. However, because of its cheaper price and the greater demand from those indigenous automakers, SAME still enjoyed a very good market in China. Comparing the production and sales of SAME and DAE in the period between 2004 and 2007, the smaller engines (under 2.0) sold fastest, with sales almost doubling each year from 2005 to 2007. The sales of larger engines (2.0 L or bigger) were slow in 2005 then experienced a 56 percent increase in 2006, growing another 20 percent in 2007.

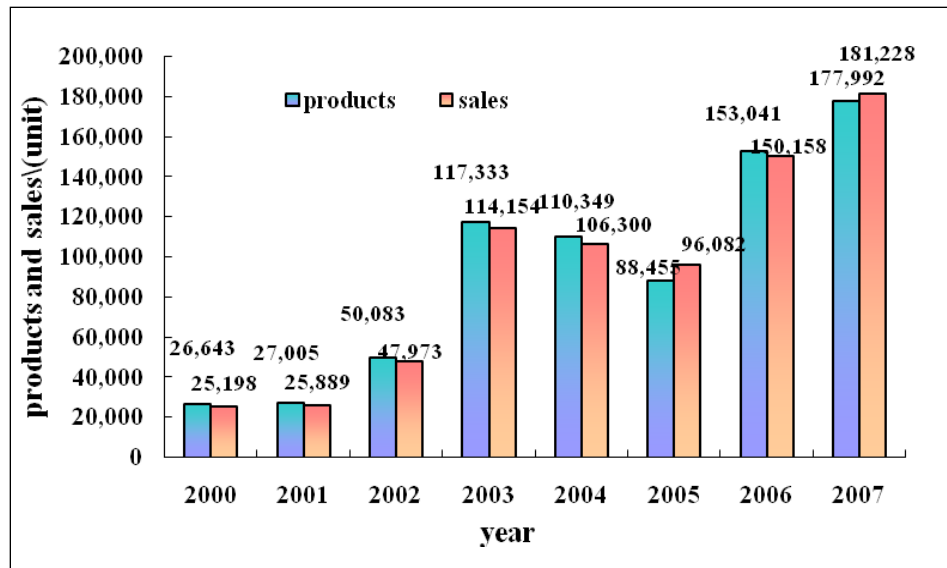


Figure 7. 21. Production and sales of SAME, 2000-2007³²³

Table 7. 10. Technical data for engines 4G63, 4G64 and 4G69³²⁴

Model	4G63	4G64	4G69
Max power (Kw(ps)/RPM)	98/6500	99/5000	118/5750
Max torque (N.m/RPM)	167/3000-4500	195/2500-3000	201/ 8226
Displacement	1.997	2.35	2.378

³²³ The author of this thesis has combined and edited 'Zhongguo Qiche Gongye Nianjian, 2005, 2006, 2007' (China automobile industry year book 2005, 2006 and 2007) 2005, Page 491; 2006 Page 517; 2007, Page 461. For the source of the engine production and sales of SAME, see the Macro China database table 499.

³²⁴ Mitsubishi 4G64, 4G69 engine specifications, ANON., 'Haerbin Dongan Qiche Zhizaochang Chanpin Zhanshi, 哈尔滨东安汽车制造厂产品展示 (Haerbin Dongan Automobile Factory Product Introduction)', 4G63 Engine, ANON., 2005, 'Shenyang Hangtian Sanling Qiche Fadongji Zhizao Youxian Gongsi, 沈阳航天三菱汽车发动机制造有限公司 (SAME Official Web)', <<http://www.same.com.cn/Article/ShowClass.asp?ClassID=8>>, accessed 17 May 2009.

(Litre)			
Cylinder (one)	4	4	4

The transnational engine JVs, such as FAW-VW, SAIC-VW and SAIC-GM, which controlled the sector of engine production and the technology, would not sell any of their engine products to other Chinese indigenous factories to prevent competition. Therefore, MMC used its JV in China to manufacture and market the combustion engine to meet a ready demand. This matched accordingly with the growth of China's automobile market and indigenous Chinese automakers that required engines to meet the output of their vehicle production. This was reflected, as illustrated in Figure 7.22 below, in the rapid growth in MMC's engine sales between 2004 and 2007. Its sales rose from 148,340 units in 2004 to 466,490 units in 2007, some 8.01 percent of the entire engine sales in China. In summary, the Chinese indigenous automakers used 32.56 percent of its products in their 1,432,476 units of passenger car.³²⁵

³²⁵ Guojia Xinxi Zhongxin (National Information Center) and Commission) (eds.), *Zhongguo Qiche Shichang Zhanwang, 2008* 中国汽车市场展望 (*China Automotive Market Outlook 2008*). Page 192.

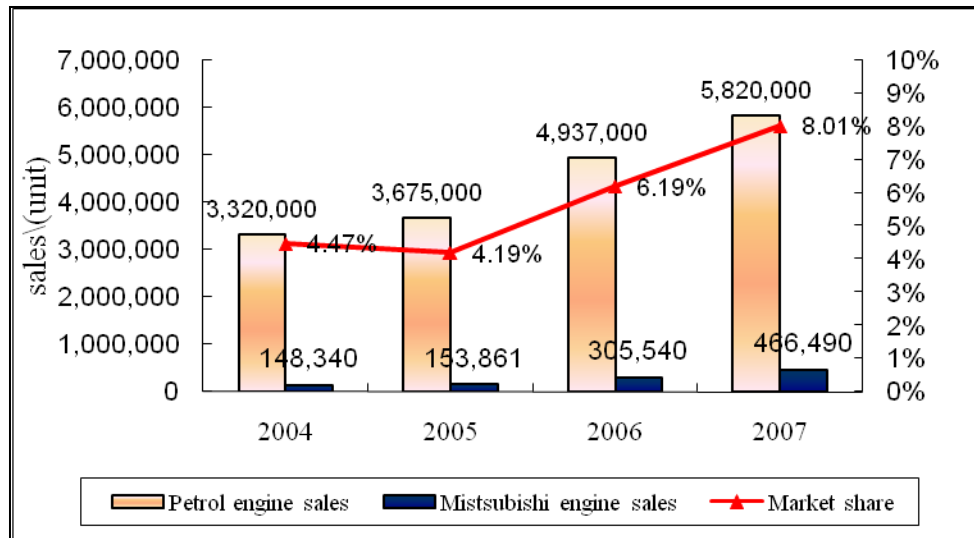


Figure 7. 22. The sales and market share of MMC engine products in China, 2004-2007³²⁶

(The entire Mitsubishi engine product sales in China = DAE sales+ SAME sales)

The convenience and availability of Mitsubishi engines offered by both DAE and SAME motivated many indigenous automakers to increase their production. As explained earlier in Table 7.8, as many as 19 indigenous automakers had adopted smaller engines in their vehicle production from DAE and larger engines from SAME. Even the leading Chinese automaker of the Big Three, FAW, used the popular 4G63 2.0 and 4G64 2.4 Litres

³²⁶ The author of this thesis has combined and edited 'Zhongguo Qiche Gongye Nianjian, 2005, 2006, and 2007' (China automobile industry year book 2005, 2006, and 2007). For the engine production of SAME and DAE 2005 Page 491; 2006 Page 517; 2007 Page 461. For total petrol engine sales: 2007 Page 462.

engines in its non-JV venture MPV models 'Ziyoufeng'. DMC, another one of the Big Three, used the 4G93 1.8 litres engine for its model 'Joyear'. The heavy dependence on the borrowed MMC engines had turned into a dilemma for indigenous automakers as competition became greater whilst, at the same time, there were no alternative suppliers to change to.

The biggest challenge for the Chinese indigenous factories was that many of them were adopting the same engine from DAE or SAME, and thus competing in the same category of engine displacement and vehicle performance, which did not bring any added value to the car for consumers. For instance, Hafei's model 'Saibao' had to compete with Southeast's model 'Family' and BYD's model 'F3' because they share the same core, a 4G18 1.6 Litres engine. Chery's Tiggo model had to challenge Hafei's model 'Junjie' with the same 4G63 engine, a 2.0 Litres model developed by Mitsubishi and made by SAME. By using the same engine in their car building, manufacturers therefore had no distinctive features to offer in the group of low-end models. Although many Chinese indigenous companies did not have the capacity to build their own engines, they did not prefer MMC's engine technology over those advanced ones by Toyota and Honda. MMC's intention in producing more vehicles in China with its two JVs, Hunan

Changfeng and Southeast Motors, also caused distrust and anxiety with Chinese indigenous firms, basically forced into adopting the less efficient Mitsubishi engines offered by DAE and SAME.

Being apprehensive about the control the Mitsubishi engines had in domestic market, Chery and Geely found they had no choice but to become technologically independent by developing their own engines.³²⁷ As explained in Section 4.3, Chery received loans from local government and contracted AVL to develop its own engine series in 2007. By 2007, Chery had greatly reduced its dependence on MMC and fulfilled 88.12 percent of the need of its own vehicle production. After Chery successfully developed the series of ACTECO engines, it immediately replaced the DAE and SAME engine used in its models with its self-produced engines. What is more, Chery had proved its self-developed engines perform better than MMC's. The specifications of the engines produced by Chery and MMC are compared in Table 7.11. Chery's ACTECO 1.6 Litres engine used in its A5 model exceeded the Mitsubishi engine 4G18 (1584cc) in horsepower (80/5800 RPM vs. 75/6000 RPM) and in torque capacity. It is also noted that the ACTECO 1.6 is technologically better than the Mitsubishi 4G18 because the former

³²⁷ Interview # 1, Geely Interview # 2, Chery

met the E-IV while the latter only reached the E-III standard of emissions with approximately the same fuel consumption.

Table 7. 11. Comparison of engine performance between MMC 4G18 and Chery ACTECO³²⁸

Engine specifications	ACTECO 1.6L	4G18
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³²⁸ The author of this thesis has made this comparison of research, based on these data: for ACETO engine, ANON., 2007, 'Qirui ACTECO 1.6 Fadongji, 奇瑞 ACTECO1.6 发动机 (Chery ACTECO 1.6 Engine)', <<http://www.xici.net/b353856/d61405631.htm>>, accessed 3 June 2009. For DAE 4G18 engine: ANON., 2008, 'Haerbin Dongling Dongli 4G18 Fadongji Youshi, 哈尔滨东菱动力 4G18 发动机优势 (Advantages of DAE 4G18 Engine)', <<http://hi.baidu.com/哈尔滨东菱动力/blog/item/c84a4025c7c88e34c9955915.html>>, accessed 3 June 2009. Sichuan Qiche Gongcheng Xiehui (ed.), *Liukuan Qirui ACTECO Fadongji Jianjie, 六款奇瑞 ACTECO 发动机简介 (The Introduction of Six Models of ACTECO Engine by Chery)* (3; Chengdu: Sichuan Qiche Gongcheng Xiehui, 2006).

Models	Chery Tiggo 1.6 、 Chery A5	BYD F3\Haima Family\Hafei Saibao etc.,
Displacement (Litres)	1.6	1.6
Power (Kw/RPM)	80/5800	75/6000
Max torque (N.m./RPM)	144/4200	136/4500
Cylinder	4	4
Valve per cylinder	4	4
Cylinder arrange	Direct exhaust design	Direct exhaust design
Compression ratio	10	9.5
Fuel supply method	Multi-Point Injection	Multi-Point Injection
Raise power (Kw/l)	46.069	46.84
Specific power (Kw/Kg)	0.0669	0.062
Fuel consumption	60 Km/3.5-5.2 Litres	60Km/3.5-5.7 Litres
Emission standard	E-IV	E-III

Although MMC owned 21 percent and 34 percent respectively of DAE and SAME in the JVs, its technological involvement still played a significant role in building engines for the Chinese indigenous auto factories, especially for late starters such as BYD, Brilliance Auto, Hafei Motors, Chery and Geely. The shortfall in market demand would have to be filled by MMC, if not by other foreign companies. MMC was not concerned too much by its minority stake in the setup of DAE and SAME as long as it controlled the engine and transmission technology and could continue to import newer engines from its parent

company in Japan. In 2006 MMC established a 100 percent-owned company in Shanghai, named Mitsubishi Automobile Technology, to control the R&D of components and the verification of standards to support their products and marketing in China. As the factories of Chery and Geely were struggling to develop and expand their own engine and transmission components, MMC dominated the nucleus technology of most Chinese indigenous automakers in the early 2000s.

Whilst, in the area of diesel engines for trucks and buses, Chinese local brands dominated by supplying 91.8 percent of the market, in the domain of Chinese combustion engines for passenger cars, the MNCs controlled 62.5 percent of the market, among which VW, Toyota, Honda, and Mitsubishi ranked in the first four positions respectively. MMC, however, is the only foreign automaker in the two JVs, DAE and SAME that sold their engines to Chinese indigenous auto factories capturing 8 percent of the market, as shown in Figure 7.23.

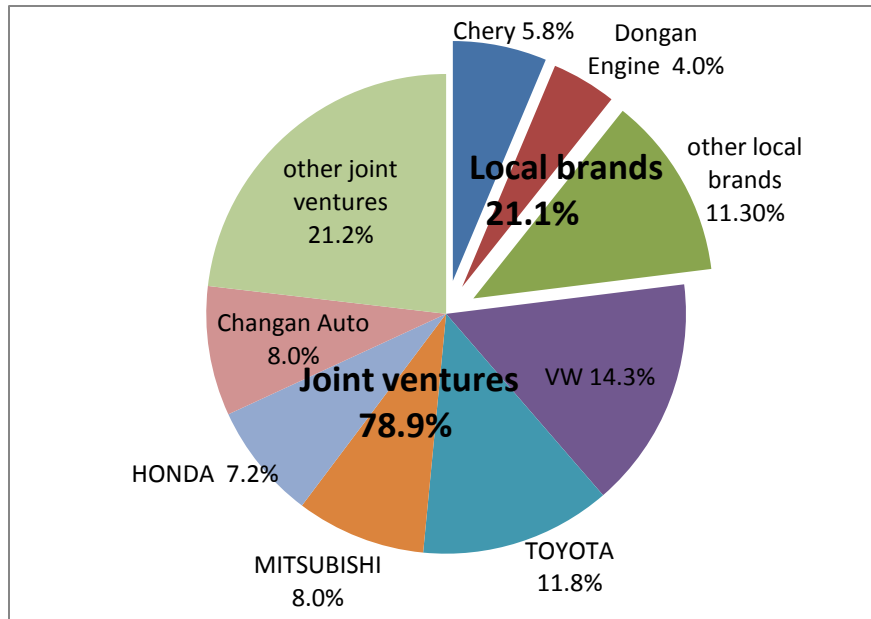


Figure 7. 23. The share percentage of the main engine JVs in China, 2007³²⁹

The superiority of Japanese automakers in engine technology rapidly established their markets in China. Though MMC did not lead in car sales, it found China to be a large and convenient market for their retired and dated engines. Chinese indigenous automakers at the same time exploited the opportunity in the emerging Chinese car market by adopting Japanese engines for their expediency in production. Lacking

³²⁹ The author of thesis has made Figure 7.23, based on the statistics from Zhongshang Qingbao Wang, 2008, Zhongshang Qingbao Wang 'Tisheng Zhongguo Qiche Fadongji Hangye Zizhu Fazhan Nengli de Zhengce Xuanze, 提升中国汽车发动机行业自主发展能力的政策选择 (Policy Options to Promote Engine Self-development in the Chinese Automobile Industry)', <<http://www.askci.com/freereports/2008-04/200841585011.html>>, accessed 22 April 2009

genuine and distinct products to offer, the Chinese indigenous automobile industry, with a few exceptions such as Chery and Geely, was trapped in a vicious cycle of low-priced product and inferior quality.

7.5 Human resources: Personnel, Turnover and Academic and Professional Training Centres

When China's car industry started in the 1950s with practically no technology and little expertise, the government was barely established, recovering from a bleak economy as a result of World War II and civil wars. After the civil war ended, living standards were low under the orthodox communist system at the time. Passenger vehicles were rarely seen on the roads and most of them were for the privileged few or government officials. The state economic plan included the building of the automobile industry, but it referred only to the building of truck or cargo transporters. There was no market for passenger cars.

In the 1950s the Soviet Union assisted China with building its first automobile factory, the FAW, by providing technicians and engineers. This gave birth to China's automobile industry, but the industry had a slow start lacking capital, technology and especially

trained human resources. During the early stages of factory building, China had to dispatch thousands of trainees to the Soviet Union to study basic automotive engineering and the making of automotive components. The Soviet Union's withdrawal of its assistance struck a blow to the FAW factory, leaving a void of technology and professionals. FAW barely managed to stand on its own feet whilst completing the building of the assembly factory, and it suffered disruption during its early development. A few of FAW's Russian-trained engineers were sent to Hubei Province to construct the second Chinese automobile factory, SAW, which was renamed DMC. These workers had limited experience and automotive knowledge. In addition, the key personnel of the automotive sector, whether in FAW or in DMC, had to face the political turmoil and oppression brought about by the ongoing Cultural Revolution that lasted for a decade till the late 1970s. Consequently, the establishment of the SAW was a failure.

Many top political leaders, such as the economic reformer Deng Xiaoping and former chairman Jiang Zemin, were involved with the development of the automotive industry to some extent. As explained in Chapter 2, Deng once worked in France's Renault automobile factory as an assembly worker during his overseas study trip, and later directed economic restructuring and development, including the building of the

automotive industry. He frequently attributed his ideas and thoughts to his past work experience at Renault, and was actively involved in state planning to set up FAW. Jiang represented China in 1953 to 1956 in coordinating with the Soviet Union in transporting equipment and machinery and assumed responsibility in supplying power for the construction of FAW. His political position changed later, but his ties with FAW and the Chinese automotive industry remained closely connected. During his term as the Mayor and Communist Party Secretary of Shanghai Municipality (1985-1986), he was involved with the introduction of Germany's VW to Shanghai, forming a JV with China's SAIC. Among the three major primary industries, petro-chemicals, airlines and automobile manufacture, Jiang favoured the latter and promoted the JV deal between VW and SAIC. As the VW-SAIC JV was formed in 1985, Jiang recruited many of his former colleagues from FAW and DMC to work for the new corporation. For instance, Wang Rongjun who had worked for both FAW and DMC was recommended through the referral of Jiang and became the President of SAIC, representing China during the introduction of the JV. Because the Shanghai-based SAIC was a state enterprise and administratively reported to Shanghai Municipality, Jiang's former connection in FAW and his position as the General Party Secretary of Shanghai Municipality associated him with the promotion of VW-SAIC. Zhu Rongji, the fifth Premier of China and a prominent economist and well-

known reformist in curbing China's overheated economy, was one of the closest colleagues of Jiang Zemin. Earlier in his political career he assumed the position of the Vice Chairman of the State Economic Commission and later became the mayor of Shanghai (1988-1991), the new economic centre in China. Through his term as the Mayor of Shanghai, he actively promoted the establishment of SAIC-VW's JV and tackled the problems of building the components industry in China to meet the requirements and the demand of the venture. Clearly, political leaders such as Deng, Jiang and Zhu were more involved in the macro economy and state policies, but their earlier contribution as top government officials to China's automotive industry is commonly acknowledged.

Following China's Big Three, other Chinese indigenous automakers established their own automotive R&D institutions and employed staff numbering from a few hundred to 2000. As shown in Table 7.12 below, each company has its own research institute to train personnel for building their required automotive technology.

Table 7. 12. Chinese indigenous companies' R&D institutes³³⁰

Company	R&D Institution
Chery	Chery Automobile Research Institute
Geely	Geely Automobile Research Institute
Great Wall	Great Wall Motors Research Institute
BYD	BYD Automobile Research Institute
Lifan	Tongji Tongjie-Lifan Automobile Research Institute

The Chinese government's bias towards state automobile enterprises gave the Big Three a competitive edge in attracting skilled workers and management personnel in middle and lower levels. During the decade 1990s, as JVs with foreign companies flourished, the demand for human resources in the automotive field grew accordingly. College graduates majoring in engineering, materials, chemistry and electronics rushed into the jobs offered in the growing car industry. Key universities and academic institutes offered automotive-related courses to prepare students for the job market. The pay scale and employment terms for engineers and skilled workers in the automobile factories were generally more attractive than those in other labour-intensive industries. What is more,

³³⁰ Interview # 2, Chery Interview # 1, Geely , Interview # 4, Great Wall Interview # 3, BYD Interview # 8, Lifan.

since China's auto industry continue to show signs of growing and profiting in the first half of the 2000s, the jobs offered in this sector implied job security and additional compensation. However, the constraints each company faced demand further examination.

When the Chinese automobile industry experienced its fastest growth during the period 1997 to 2007, human resources was one of the most difficult bottlenecks for the indigenous factories to tackle. The mismatch between the demand for appropriate manpower for general industry and the supply of qualified personnel was serious. Each company headhunts from the others, from the professional management level all the way through the medium level of technicians and skilled workers. In addition, the pay scale difference between government-protected companies and indigenous companies meant the latter did not expect their employees, who received less compensation, to stay in their job for long. According to a Chinese Automotive Human Resource Association survey, the aggregate demand of manpower for the Chinese car and components industry was approximately half a million in 2007.³³¹ But the general shortage of human resources did

³³¹ ANON. Zhangzhou Ribao, 2008, 'Qiche Renkou Queko Yu Bashi Wan Yanfa Renyuan Zue Kuifa 汽车人口缺口逾八十万 研发人员最匮乏 (Shortage of Automobile Personnel Exceeds 800,000, Mostly Needed in R&D)', <http://epaper.loone.cn/site1/czrb/html/2008-10/30/content_140491.htm>, accessed 17 June 2009.

not help with the high turnover of automotive engineers, technicians and skilled workers among Chinese automobile companies.

What the industry actually required was experienced professionals and skilled workers and technicians, not graduates who had just left universities and colleges. For car assembly, they needed various types of industrial engineers, production designers, specialists of certain components, floor supervisors, components technicians, and skilled assembly workers, familiar with the company's manufacturing systems and production programmes. In the area of sales, they needed a range of marketing specialists, product-pricing personnel, and sales representatives who could understand the companies' and their competitors' products and selling prices. For component sourcing, they required purchasing specialists who knew enough of their supplier to buy parts of the best quality at the cheapest price to keep costs down and to have parts specialists to ensure the quality of such parts. In corporate financing, they needed diverse business and investment professionals who could deal with financial resources, including taking advantage of the stock market to balance internal cost accounting. Automobile repair technicians and after-sale services personnel were accordingly demanded to complete the service cycle.

Most important of all, they had to maintain a professional research team which had the knowledge to continue, both financially and technologically, to produce and design models that were competitive enough to stay in the market.

Though the supply of workers was very large, the Chinese auto industry in general did not have enough human resources to meet their demand and SAIC is a good example of this. As listed in the headhunting advertisement at China's job fair in 2002, the forecast of its required human resources within the following five years was approximately 30,000, but the relevant market could only meet 50 percent of that figure.³³² College graduates were not keen to work at factories and found the pay scale incompatible with the working environment. Even when they worked in factories, the turnover rate was high. On the other hand skilled workers with a few years' experience in the industry were in demand, switching jobs between the newly-started car companies. The Big Three paid higher wages because of their financial alliance with global automakers, while non-state domestic Chinese companies or private firms offered their employees considerably less. From the comparison shown in Table 7.13 below, SAIC ranked first in their level of pay and Great Wall ranked last. This estimated information was collected through a brief survey of the popular internet sites of Guangdong Province for reference

³³² ANON. Nanfang Wang Qiche Pindao, 2002, 'Jishu Gonren Qinghuang Bujie Sheilai Dazao Qiche Rencai, 技术工人青黄不接 谁来打造汽车人才?(Who Is Preparing to Meet the Shortage of Skilled Workers?)', <<http://www.southcn.com/car/yjdt/deepreport/200206280924.htm>>, accessed 17 June 2009.

and recommendation for college graduates in the job market.³³³ Due to the living standard in each city and province, the pay scale of each factory did not reflect spending power and other job considerations. For example, SAIC/VW is located in Shanghai near the more affluent coast in southern China and FAW/VW in Changchun in the less-developed north. Living expenses in the former are higher than the latter and therefore the pay scale is higher. As the survey shown in Table 7.13 demonstrates, the pay scales of the indigenous companies were lower than those of Chinese companies which were associated with global automakers.³³⁴ Chery, Geely, BYD and Great Wall are obvious representatives of those indigenous companies which could not offer the same terms as the Big Three.

Table 7. 13. Pay scale comparison of engineers at Chinese automakers in 2007³³⁵

Company name	Monthly salary in	City, province
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³³³ *Qiche Da Shijei*, 11 November 2008, Shenzhen, available at > <http://www.mycar168.com>, accessed 1 March 2009.

³³⁴ Interview # 10, Component suppliers

³³⁵ *Ibid.*

	US\$	
Guangzhou/Nissan	1100	Guangzhou
SAIC/GM	570	Shanghai
SAIC/VW	570	Shanghai
DMC/Nissan	570	Guangzhou
DMC/Honda	570	Guangzhou
Changan/Ford	570	Chongqing
Beijing/Hyundai	570	Beijing
FAW/VW	428	Changchun
Chery	300	Anhui
Geely	285	Zhejiang
BYD	250	Shenzhen
Great Wall	200	Baoding, Hebei

(Using 2007 currency exchange rate RMB/US\$ 7:1 as constant)

The variation in the pay scale in China's automobile industry had caused serious turnover of personnel among automobile companies. As job-hopping came to be no longer a constraint in China, headhunting of professional managers and a corporate brain drain became prevalent. Many experienced factory directors and senior engineers moved from firms to firms on attractive terms and offers during this decade. As discussed in Chapter 2 and Section 3.4 of the subsequent chapter, FAW seemed to be a primary training school for most companies established in the 1980s. SAIC and DMC's top executives and managers came from FAW and settled in Shanghai and Wuhan for better living standards and the hope of future advancement. Some of them were given an opportunity to transfer

between the three firms, subject to the requirements and selection processes. Their choice might not have been entirely free, but the channel was open.

Obviously, salary and wage scales should not be considered the only cause for job-swapping between Chinese factory employees. There were other factors such as company benefits, working environment, and proximity to home and job satisfaction which attracted employees to stay in their post. Accompanying the rapid growth of the Chinese automobile industry, the twin problems of recruiting and maintaining employees emerged. Chery, for instance, had difficulty in keeping its entry-level workers because of its less attractive pay and longer working hours. Many front line workers left Chery and made complaints that their wage was less than 700 RMB per month (approximately US\$100) and they had to work twelve hours a day, conditions of which drove them to leave.³³⁶ Another worker posted on the internet his concern that, under Chery's management philosophy, it could hardly stop employees from departing, stating that, of the 360 university graduates Chery recruited in 2007, by 2008 only 66 were left. The reason, as some anonymous worker complained, was 'the boring nature of the assembly

³³⁶ ANON. Yangzi Wanbao Nanhai Wang, 2009, 'Qirui Beizhi Bianxiang Caiyuan - Yixian Yuangong Yuexin Liuqibai Beipo Lizhi, 奇瑞被指变相裁员 一线员工月薪六七百被迫离职 (Chery Accused of Layoff - Front Line Workers with Monthly Wages of RMB \$6-700 Forced to Leave)', <<http://auto.hinews.cn/page.php?xuh=5847>>, accessed 15 March 2009

line work and uncompetitive salaries which prompted them to look for work elsewhere'.³³⁷

In senior management at Chery the job-hopping situation was also serious. Chery claimed that it was the only automaker upholding China's national pride. The patriotic appeal by Chery of building an independent automobile industry attracted the attention of many overseas Chinese who had worked for global automakers and acquired automotive expertise and experience. Since 2004 many Chinese indigenous companies have successfully headhunted professional managers from the global auto firms based in the USA. The senior engineer, Xu Min, discussed earlier in Section 4.3 of Chapter 4 was hired by Chery in 2003 as the head of Chery's Engine Development Department. As a naturalised American Chinese, Xu acquired his experience from working for Ford and GM as a senior engineer of automotive engine design. Answering Chery's appeal to work for a truly Chinese factory, he returned to China from America and joined Chery. However, he resigned the very next year because of being unhappy with the job. Many Chinese engineers who had returned from overseas to work for Chery joined Xu and

³³⁷ ANON. Baidu Tieba, 2006, 'Yin Zong Wuo Xiang Dui Ni Shuo, 尹总我想对你说 (President Yin: I Would Like to Speak to You)', <<http://tieba.baidu.com/f?kz=154975220>>, accessed 15 March 2009

walked out. The CEO of Chery, Yin, alleged that Xu and other engineers' departure were because they were not familiar with the Chinese cultural and national situation, plus they did not comprehend 'Chinese management style',³³⁸ but this can be seen in a wider text.

According to one of Chery's staff engineers, the underlying reasons for the high turnover rate of Chery's engineers was the lack of respect from the top management towards manufacturing standards and technology. In addition, the management was 'expecting instant success from the performance in recruiting those overseas engineers who had just joined Chery but understood little of the work that had already been done by others.'³³⁹

This produced a lack of interests and negative attitudes from existing employees when important projects were being developed. Locally-hired employees felt discriminated against upon the sudden arrivals of new bosses who had not previously worked through the ranks in the company. More upsetting was that the management sometimes bypassed routine industrial and manufacturing procedures. For instance, in component making, a supplier with less concern for quality could still deliver non-conforming parts to Chery's assembly line, bypassing direct supervision by offering favours to those managers who

³³⁸ Interview # 2, Chery.

³³⁹ *Ibid.*

would give orders to accept. The staff engineer summarises that the widespread bureaucracy in provincial enterprises such as Chery had frustrated the morale of the employees who had originally been enthusiastic about developing a Chinese brand. In 2003, the situation was overwhelming and unmanageable because approximately three quarters of the college graduates recruited by Chery had left the company.³⁴⁰

Similar personnel instability had taken place in private enterprises such as Geely. As discussed in Section 4.2, the Geely Group and its primary operation Geely Automobile had evolved from a family business to a publicly-listed company since May 2002, when the original founders Li and his families withdrew from the front-line management and were replaced with professional managers. Bo Yang, an experienced executive who previously worked for Brilliance Automobile, as explained in Section 5.2, in the planning and project departments, was recruited in May 2002 by Geely as the CEO of the Geely Group (including Geely Automobile). Between 2002 and 2007, Geely had not only grown very rapidly in manufacturing and sales but also expanded its factory facilities and developed its own engine. But in 2006, not long after her recruitment, Bo Yang left her

³⁴⁰ ANON., 2008, 'Haixin he Qirui de Rencai Fazhan Pingjing, 海信和奇瑞的人才发展瓶颈 (The Bottleneck in the Development of Human Resources in Haixin and Chery)', <<http://www.joyjob.cn/craft/dispArticle.Asp?ID=18116>>, accessed 15 April 2009.

post. Xu Gang, a professional accountant and business manager, succeeded Bo Yang in 2006 but soon resigned in 2007, becoming the second CEO in as many years to leave Geely for undisclosed reasons. The instability of top management personnel was disturbing for Geely during its expansion. Seeing this as an opportunity, the other automakers recruited and attracted professionals and skilled workers who desired to leave Geely. This made it even harder for Geely to retain control of its human resources. Before Geely eventually invested in building its workforce, it lost approximately 30 of its newly recruited R & D engineers every year between 2000 and 2003.³⁴¹

Clearly, graduate applicants from China's leading universities such as Beijing and Qinghua in Beijing, or Jiaotong, Fudan and Tongji in Shanghai preferred state-enterprise companies to Chery or Geely because of higher pay and job security. JVs such as SAIC-GM offered special programmes with various renowned universities to organise training teams for the required corporate personnel. But for Geely it was not that easy. Even the graduates of less eminent universities who were hired by Geely showed little job loyalty. In trying to deal with this problem, Geely soon found that only substantial investment in

³⁴¹ ANON. Jingji Ribao (Economic News), 'Zizhu Chuangxin Tuotai Xuangu Kan Jili, 自主创新 • 脱胎换骨看吉利 (Self-development and Innovation: the Re-born Geely)', accessed 15 June 2009.

human resources would be practical and advantageous over the long run. In 2000, the Geely Group applied for a permit from Beijing Municipality to create an educational hub, focusing on automotive-related vocational and polytechnic courses. During the 2000s when China was developing a market economy, the Chinese government relaxed its educational policy and encouraged citizens and private enterprises to build academic institutes of higher learning to supplement the insufficient number of colleges. In the same year, Geely's application for founding a university was approved without difficulty by Beijing Municipality and Beijing Geely University was officially registered with the Ministry of Education.

Approximately 6600 acres in size, the location of Beijing Geely University is Changping Science and Technology district. Its entire administration and educational facilities were new, together with students' dormitories, a complete sports gym, and a modern library and dining hall. To complement the institutional investment it recruited and contracted teaching staff from top-rated universities such as Beijing and Qinghua, research fellows from the National Science Academy, and visiting professors from overseas. In 2001, it began to accept student applications. Since it was the first private university to offer vocational courses in college and work opportunities after graduation, the response to its

general enrolment programme was overwhelming. A few years later, its curriculum extended from the original polytechnics to 15 departments in various courses, plus two graduate schools in automotive engineering and education, becoming more like a normal university. By 2007, it had more than 900 faculty and staff and approximately 6,300 graduates every year. Geely claimed it invested more than 800 million RMB (or US\$130 million) in building this university and programming its infrastructure and academic courses.³⁴²

The evidence of Geely's deepening participation in education is undeniable. Before the early 2000s Geely had established two vocational polytechnics in Zhejiang Province, training automotive workers in the fields of tooling, die casting, welding, metal cutting and precision, basic engineering and electronics. Its efforts culminated in the formation of Beijing Geely University, which was followed by academic functions, international programmes, and ultimately appointments on company assigned jobs. In 2008, only seven years after its formation, Beijing Geely University ranked twenty-seventh in overall evaluation ratings among 100 private colleges that had been selected from the

³⁴² ANON., 'Beijing Jili Daxue Daxue Jianji, 北京吉利大学大学简介,(Introduction of Beijing Geely University)', <<http://www.bgeelyu.com.cn/school/school.html> >, accessed 10 April 2009. ANON., 'Yuanxiao Gaikuang, 院校概况,(Introduction of College Investment)', <<http://www.buuedu.com.cn/jl/index.htm>>, accessed 15 June 2009

entire country in academic infrastructure and personnel training.³⁴³ Geely's establishing of the university did assist with promoting the image of Geely as an automaker in its factories. In 2008, Beijing Geely University was one of the top three colleges most reported in the country's media and news.³⁴⁴ Most beneficial of all, of the 30,000 graduates from its own training schools Geely managed to recruit 60 percent of the technicians required in its own factories, and one quarter of the work force needed in its own automotive R&D section.³⁴⁵

Geely's major competitor Chery had not been enthusiastic in building its own academic institutes. They had relied on governmental ties with local colleges which provided graduates in automotive engineering or with qualifications in automotive-related knowledge. For instance, Chery worked closely with Hefei University of Anhui Province

³⁴³ China's Alumni Association, *Da Xue Za zhi*, and *21st Century Renchai Bao* made a survey of evaluation of Chinese private colleges, which is the 7th report since 2001.

ANON. Daxue Zazhi, (2008) 2008 Zhongguo Zuishou Media Guanzhu Daxue Paihang Bang, 2008 中国最受媒体关注民办大学排行榜 (2008 Most Reported Private Universities in China) <<http://www.cuaa.net/cur/2008mb/15.shtml>>, accessed 2 February 2009.

³⁴⁴ The first is Beijing Chengshi Xueyuan (Beijing City University) with 2370 reported stories, the second Beijing Geely University with 2290, and the third Xian Fanyi Xueyuan (Xian Language and translation College) with 1330. Ibid., accessed 3 February 2009.

³⁴⁵ ANON. Jingji Ribao (Economic News), 'Zizhu Chuangxin Tuotai Xuangu Kan Jili, 自主创新 • 脱胎换骨看吉利 (Self-development and Innovation: the Re-born Geely)', accessed 19 June 2008.

where Chery is located. Its graduate recruitment programme further extended to more than 100 state-run academic institutes across the country. However, after seeing Geely's success in building its own university and training its own human resources, Chery followed suit and applied for a permit to form a similar academic institute, named Chery University. It was established at Wuhu in Anhui Province at the end of 2006, but the size and scale of it was too small to be even considered a university. Apparently, it still lacked funding and well-rounded plans to become a formal university like the university created by Geely. Other Chinese indigenous companies likewise depended on cooperation programmes with colleges to secure their human resources and had little interest in founding universities of their own. Geely's investment in building Beijing Geely University stood out from the competition in the company's workforce training and preparation. Its unique approach and pioneering work seemed to be paying off and rewarding the company. It was the first time that a Chinese indigenous automaker had assured a constant supply of human resources to accompany its growth.

Chapter 8: Conclusion

This thesis aims to comprehend the historical development of the Chinese indigenous auto industry. It aims to understand how China has acquired its indigenous automobile industry, rather than seeking justification for its existence. It encompasses a period of five decades, classified into three stages according to the industry's growth, the changes that occurred and the environment that led to these respective developments. Chapter 1 explains the theoretical framework of the study; Chapters 2 and 3 aim to describe the background of the early Chinese automotive industry and various challenges arising in China's emerging economy, including those that led to the formation of governmental policies and thus the establishment of JVs with foreign partners; Chapters 4 and 5 examine the development of Chinese indigenous automakers and explain the incremental industrial and technological progress of various firms, their characteristics and strategic positioning in the overall Chinese auto industry. In Chapters 6 and 7, I have presented an analysis of the internal and external factors that affected the growth of Chinese indigenous automakers. My purpose has been to develop a better understanding of the role played by these indigenous automakers within the general Chinese automobile industry. Since there have been no academic publications on the indigenous sector, it is

worth emphasising that this thesis is the first attempt to investigate the industry from perspective of economic history, rather than from contemporary commercial and pragmatic point of view. It is also possible that by faithfully recording the development of the Chinese indigenous industry and examining the key factors involved as it continues to evolve, some light may shed on its future.

The evidence presented in this study outlines the strategic choices adopted by the Chinese indigenous automakers that have led to the current situation. These companies have, within the fifteen years since their debut, achieved considerable and increasing manufacturing capacity by correctly identifying a gap in the market for microcars and penetrating the market previously controlled by the JVs. In particular, Chapter 7 examines the limitations of the indigenous automakers and shows their lack of core engine technology, which they tried to make up by various means that included outsourcing and embarking on design efforts of their own.

In approaching the final summary, I would like to discuss the key implications and strategic trajectories relating to it from a historical perspective. Specifically, the market shares of Chinese indigenous manufacturing were found to be smaller (22.78% in 2007, as evidenced in Table 3.7 of Chapter 3) when compared to that of the JVs in the Chinese

automobile market, which was dominated by the SOEs and their international partners. It might be asked, if China has become part of a global division of labour in the auto industry, why was there a need for an indigenous auto industry? What could the indigenous firms offer that the existing JV firms could not? This thesis does not provide a formal theoretical justification for the existence of the indigenous companies – no such theory is available, but as I show below, it would be difficult to argue that the JV structure could be justified as being particularly superior, let alone optimal.

In Chapter 1, I outlined the view that China would not find it easy to compete against the global auto powers and then questioned whether it would be able to build a strong industry like the Western, Japanese and Korean automakers. The consensus of several academic publications has suggested that it could not. For examples, Peter Nolan in his article ‘The Challenge of Globalisation for Large Chinese Firms’ argued that Chinese firms have difficulty competing against global giants in high value-added products because of restraints such as the remnants of the planned economy, local protectionism, lack of incentive, bureaucracy and ideological commitment to state ownership.³⁴⁶ These

³⁴⁶ Nolan, Peter, and Jin Zhang, ‘The Challenge of Globalization for Large Chinese Firms’, Judge Institute of Management Studies, *World Development*. University of Cambridge, vol. 30, (12) (2002) Pages 2089-2017.

restrictions were reflected in state-enterprises such as PetroChina and Sinopec before they implemented restructuring and flotation initiatives; the problems and negative effects have lasted long after the removal of restrictions. Similarly, Edward Steinfeld, the director of the MIT-China programme, argued that the capacity for innovation in Chinese firms and the ability of those firms to upgrade within global supply chains were impeded by the legacies of Chinese reform-style bottlenecks and by the inconsistencies in governmental industrial policy. Leading Chinese firms, as Steinfeld argued, would face a long process to catch up with their foreign rivals.³⁴⁷

Although not specifically addressing the Chinese industry, John Humphrey, in an investigation for the United Nation Industrial Development Organization, reported in 2003 that in the course of the 1990s, technologies of the major North American, Western European and Japanese auto industries were substantially transferred into emerging markets such as Brazil, the Czech Republic, India, Poland and South Africa as a result of trade liberalisation, globalisation trends within the industry, and the restructuring of assembler-supplier relationships. Component suppliers followed the foreign direct

³⁴⁷ Steinfeld, Edward S., 'China's Shallow Integration: Networked Production and the New Challenges for Late Industrialization', *World Development*, Massachusetts Institute of Technology, 2004, Vol. 32 (11) (2004) Page 1984.

investment (FDI) of their major customers and replaced the local supply linkages. But first-tiered and large-sized Chinese JV firms did not seem to have benefited in the same way from the influx of FDI of the global auto companies.³⁴⁸

Yasheng Huang in his book *Selling China* explains the complicated association between FDI and economic reform. He argues that large state firms were not forced to privatise their businesses until the late 1990s and many ownership reforms were motivated by the desire to expand, rather than to reduce, state controls over the economy.³⁴⁹ Huang suggests that the privatisation of SOE ownership has not been entirely relaxed by the government, and that policy makers still wish to preserve socialism and fear the dominance of private ownership.³⁵⁰

All these studies indicate large constraints on the ability of Chinese state-owned enterprises to compete globally. However, as outlined in Chapters 4 and 5 of this thesis, domestic firms that are not owned by the state or originally supported by the government were less influenced by the state directives and limitations mentioned above. This essential difference suggests an alternative development strategy for the indigenous

³⁴⁸ Humphrey, John., 'The Global Automotive Industry Value Chain: What Prospects for Upgrading by Developing Countries', *Sectional Studies Series*, Working Paper, Vienna, (2003) Pages 1-62.

³⁴⁹ Huang, Yasheng, *Selling China*, (Cambridge University Press, Cambridge, 2003), Pages 340, 350.

³⁵⁰ Ibid. Page 345.

factories. There were no academic studies focused on or specifically related to the general development of the Chinese automotive industry over the last two decades until Dr. Eric Thun published his book *Changing Lanes in China*.³⁵¹ Thun describes the adoption and the operation of the pattern of JVs in China's automobile industry and the involvement of different levels of the state. Among populated regions, Shanghai's approach was developmental, Beijing and Guangzhou had laissez-faire local states and Changchun and Wuhan were firm-dominated localities. Thun argues that the JVs enjoyed high profits and their products were mostly sold to government institutions; they successfully captured the market and built up their component supply chain. However, Thun barely considered the indigenous sector, which, at the date of publication in 2006, had already taken approximately one fifth of the Chinese passenger-car market share and which reached twenty-eight percent in 2007 (as illustrated in Table 3.7 of Chapter 3). In his article 'Industrial Policy, Chinese-style: FDI, Regulation, and Dreams of National Champions in the Auto Sector',³⁵² Thun points out that the fragmented Chinese automobile market was dominated by state enterprises and their foreign partners. He did

³⁵¹ Thun, Eric, *Changing Lanes in China* (Cambridge University Press, Cambridge, 2006). Part II. Pages 83-272.

³⁵² Thun, Eric, 'Industrial Policy, Chinese-style: FDI, Regulation, and Dreams of National Champions in the Auto Sector', *Journal of East Asian Studies* 4 (2004), Lynne Rienner Publishers, Boulder, Colorado, USA. Pages 453-489.

not examine the accelerating growth and the significant presence of domestically controlled firms such as Chery, Geely, Great Wall and BYD. The present author concurs with Thun's view that collaboration with foreign partners has allowed various levels of government, whether central, local or metropolitan, to dominate increasingly protected markets. But Thun does not ask why and where indigenous firms progressively developed and why the JV structure that emerged could not satisfy all the requirements of the developing car market. Moreover, there have been no academic studies investigating the effectiveness of the 50/50 partnership of JV form of organisation that dominated the Chinese automobile industry, which, I argue, is one of the most influential factors that brought about the development of the indigenous firms.

Rather than arguing that China 'needed' an indigenous industry, the evidence provided by my thesis has shown that certain market demands went unmet by the JVs. This argument requires further development. Specifically, what was wrong with the structure of the JV? What goals or expectations did the existing JVs fail to achieve? What was the problem regarding automobile technology transfer between the partners of the JVs? Was the government policy so coherent and supportive for an indigenous industry? The evidence provided by Chapters 2 to 7 has led me to suggest the following four points:

1. The JV setup, based on the 50/50 shared partnership model, failed to achieve the objective of core technology transfer to Chinese firms as intended.

Its implementation achieved the objective of enabling China to build up large automobile manufacturers and component supplier chains and produced volume cars to meet market demand. However, it has not helped its auto industry to build any cars with domestically developed engine technology. As explained in Chapter 2, China's first automobile factory FAW started from humble beginnings in the 1950s making only trucks, and achieved no technological progress for the first three decades. At this stage, its passenger car production was insignificant and superficial, with a few hand-crafted limousines only serving as symbolic transport for privileged government officials. As China began its economic reforms in the early 1980s, it understood that the backwardness of FAW's technology and the inefficiency of passenger car production were huge obstacles to meeting increasing demand.

It is not reasonable to assume that China should have not had an automotive industry at all. This option is not suggested by the theory of international trade, nor has it been followed by any large industrial country. China began to manufacture automobiles at a time when it had little access to imports. Its subsequent economic development has

revealed it to have a comparative advantage in manufacturing. Given the central role of the motor car in 20th century industrialisation, and China's abundant advantage in labour costs and manufacturing skills, and its prospective demand for motorisation, it would have been odd for it to forgo the opportunities for acquiring the large value-added opportunities of domestic manufacturing, and the opportunity for building up technological capabilities and skills that an automobile industry offers.

Realising China's comparative advantages in terms of labour costs, land, manufacturing and skills, Chinese policy makers needed to come up with an industrial policy that could attract both foreign capital and all the technology that China needed. However, in the absence of an open market, this policy had to be designed carefully in order to be effective. If China had maintained its conservative policy, the primitive automobile sector could hardly have grown because it could not have created a favourable environment for foreign investment and transfer of technology. If China had opened its doors without a protective mechanism, this core industry would have come to be dominated by foreign automakers. In the light of its experience in the second half of the nineteenth and first half of the twentieth century, China was still fearful of foreign control over its economy.

Was this fear the primary reason that China did not want to lose control of its JV setup?

Dr. Karl Gerth, in his book *China Made*, explains how and why the National Products Movement took place in the first half of the nineteenth century as a result of anti-imperialism and patriotism. He further argues that its effect is still visible in China throughout the twentieth century.³⁵³ Gerth's argument has led us to become aware of a sharp contrast between the abolition of capitalism in China in the 1950s and its revitalisation in the 1980s and onwards when China relaxed its economic policies and acknowledged its need to acquire modern technology. Just as in Western and other commercialised societies, contemporary Chinese consumers have understood the quality/price trade-off and have the options to buy name-brand imports rather than national products. Whether the deeply-rooted Chinese nationalism and culture are still associated with China's intention to build its own auto industry remains a topic worthy of continuing exploration from a different perspective.

As this thesis points out in Chapter 4, some of the indigenous automakers did attempt to harness Chinese nationalism and patriotism to campaign for their home products. For

³⁵³ Gerth, Karl, '*China Made*' (Harvard University Asia Centre, 2003), Pages 24-25, 366-367.

instance, Chery claimed in a nationwide advertising campaign that it was the ‘national champion’ and top indigenous manufacturer for the past ten consecutive years. Similarly, Geely fought for the same title and told the public that its final aim was to ‘build a national car that the Chinese can afford’ and to ‘bring Geely’s products to the world’.³⁵⁴ In 2007, Chinese Central Television (CCTV) produced a drama series called ‘Suiyue Fengyun’ (The Legendary Era), which depicted the story of how a Chinese family endeavoured to establish an indigenous auto company from a humble start, a story closely resembling that of Li Shufu and the development of Geely. This TV show won ‘Most Popular TV Programme and Best Advertisement Theme’ for that year.³⁵⁵ Such advertising campaigns require us to look beyond the economic perspective, as this thesis argues, in order to understand how and why an indigenous industry was established, and why the foremost JVs with the largest Chinese SOE partners failed to completely satisfy the market.

³⁵⁴ Anon., Jili Konggu Jituan, 吉利控股集团 (Geely Holding Group) ‘About Geely’, Geely Official Website, available at <http://www.geely.com/english/index.html>, accessed 19 December 2009.

³⁵⁵ Anon, CCTV, Zhongguo Zhongyang Dianshitai ‘Suiyue Fengyun’ Jianzhi Fabiao Huojiang Gangyan 中国中央电视台《岁月风云》监制发表获奖感言 (Award-winning speech by the producer of ‘The Legendary Era’, CCTV, 17 November 2007, available at <http://space.dianshiju.cctv.com/article/ARTI1197690429000122>, accessed 25 December 2009.

In the fields of national primary interests such as agriculture, forestry, stock-raising, fishery, mining, food processing, oil drilling and refinery, pharmaceuticals, media and publications, transportation and telecommunications, China set the strictest guidelines dictating that, in these categories, foreign companies were not allowed to invest at all. Any manufacturing products that are entirely controlled and produced by Chinese firms are considered to be 'Zizhu Pingpai' (self-controlled brands). In businesses such as public utilities, hospitals and higher educational institutions, foreign companies were allowed to invest up to a maximum of forty-nine percent ownership. However, in sectors of insurance, cargo agency and automobile manufacturing, the foreign companies' could acquire up to fifty percent of the ownership. This policy has caused protests from the interested foreign companies since its implementation, but the government has been unwavering on this principle. In 1984, 1994 and 2004, the investment policy of the central economic planning system for foreign firms underwent changes re-defining certain categories that could be financially and economically controlled by foreign countries, but the automobile guideline has adhered to the maximum fifty percent of ownership, regardless of whether their preferred Chinese partners were agencies of metropolitan Shanghai and Beijing, provincial Changchun or a local government such as Wuhan and Guangzhou. The 50/50 JV structure has been the method chosen for China to

look for opportunities through acquiring the large value-added domestic automobile manufacturing and to gain technological capabilities and skills.

In private business, a 50/50 partnership creates a high risk of entering into an impasse in decision-making and in control of management, which could lead to the partnership's diverging pursuit of interests and ultimate breakdown. When confronted with financial difficulty or with a difference in management philosophies, a partnership can become inactive and ineffective. Given equal shares, business decisions are difficult to make.

Due to the owning of manufacturing and design technology, foreign companies in their Chinese JVs controlled a majority of the board, frequently three out of five or four out of seven board members, and appointed executives to charge the production and implement strategy as per their parent companies. It is a common practice that in Sino-foreign JVs, the positions of president or chief executive officers are assumed by foreign representatives while board chairmen, a more symbolic position, are filled by Chinese representatives. The JVs' Chinese partners also select their representatives from various SOEs, which are treated as quasi-official employees with assigned terms. Chinese partners tolerated this arrangement by making provisions that the voting powers of board members appointed by their foreign partners, even with majority seats, cannot represent

more than fifty percent of their vested interests. Practically, the 50/50-partnership of JV is the maximum that both China and foreign companies would accept under China's macroeconomic policy at the time.

Since China has advantages in policy control and in resource provision, while foreign companies bring core technology, brands and management expertise, JVs based on the 50/50 sharing setup seem to be the only 'balanced' arrangement and option under China's foreign investment policy. Many major foreign auto makers, such as Toyota and Honda, were reluctant to accept this 50/50 partnership offered by the Chinese government at the start, but agreed later after seeing substantial profits made by VW and GM, who pioneered JVs in China. This practice was soon extended to every foreign automaker as they identified suitable partners from a limited set of large Chinese automobile SOEs. The revised 1994 automobile guideline further allowed each foreign manufacturer to enter into two ventures with Chinese companies but permitted Chinese SOEs to form JVs with as many major foreign auto companies as they wished.

The numerous Sino-foreign JVs across the country created conflicts of interest and competition among them. For example, SAIC-VW in Shanghai, located in southern China, was in rivalry with FAW-VW/Audi in the north on models with similar engine

size. It is worth noting that not every JV profited in their operation in China. The success of each JV depended on the strength of the partnership it was founded on. Section 3.3 of Chapter 3 provides examples of unsuccessful JVs founded between AMC (Jeep) and BAIC, and between Peugeot and GAIC, which had poor operations in China during the early 1980s because of their passivity and their weak commitment. So given the strong protectionism and irrationality of 50/50 partnership makeup, why did these foreign auto companies continue to enter into China to embrace JVs with the Chinese? Why did foreign companies extend the contracts after expiration? The answer is that they had no alternative strategies for entering the market and must have realised an acceptable profit in sharing the protected emerging market with their Chinese SOE partners. To maintain their bargaining position in this setup, the foreign companies made sure that they could keep control of the intellectual property over the core technology, which their Chinese partners entirely depended on.

In contrast, we have also examined the development of the Chinese side of the partnerships since their beginning. One important question to ask is whether the Big Three and Small Three SOEs have successfully acquired core engine technology through their JV establishments. The answer is negative, as shown in Section 4.4; the independent

models produced by Chinese SAIC, FAW and DMC, which were not produced by their JV manufacturers, were equipped either with outsourced Japanese MMC or with recently-acquired British engines. BAIC and GAIC did not produce any self-developed models. The Chinese partners in JVs could not gain core technologies from their partners within the JV structure and so in turn had to rely on the outsourcing of engines or on acquisition. For instance, SAIC's self-developed model, 'Roweve', was built based on the previous British Rover's 2.5-litre engine. 'Roweve' was not very different from the JV model in terms of engine size, the Buick 'Regal', produced by SAIC's joint venture SAIC-GM, so the cannibalisation of the market sector resulted in poor sales of Roweve: less than 30,000 units a year for both 2007 and 2008, well below its efficient scale of production. This shows that the JV structure failed to provide an answer to China's wish to trade access to its market for access to core technology from foreign partners. The government-supported SOE managements had lapped up the fixed fifty-percent profit from the success of their JV operations rather too easily, rendering onlookers, instead of pursuing the strategic purpose of developing their own technology. The notion of trading the Chinese market in exchange for foreign technology seems like wishful thinking, and the scale and profitability of JVs therefore blinded the public from perceiving the very limited extent of core technology transfer.

Under the same mandated 50/50 ownership structure, the Japanese motorcycle companies, Honda, Yamaha and Suzuki, dominated the Chinese markets with joint-venture partners (Jialing, Jianshe and Qingqi) in the early 1990s. A decade later, Chinese indigenous motorcycle firms caught up rapidly through outsourcing engines and imitating the body style of the Japanese models, and captured the majority of the domestic market share and have overtaken the JVs in production and sales.³⁵⁶ But the success of the Chinese indigenous firms in the motorcycle industry does not suggest that the same strategy could have been effective in the car industry. First, building automobiles requires multiple-tiers of components suppliers, including engine and transmission, cooling system, fuel system, electrical, climate system, chassis and suspension, body panel and hardware, which add up to higher cost and consequently higher selling-price. This is reflected in the pattern of demand since the majority of automobile buyers are government agencies and institutions which favoured JVs for their products, while buyers of the motorcycle, like customers of domestic goods, are individuals who were willing to accept indigenous brands if their pricing was competitive. Second, the competition in the automobile industry is fiercer because the partners of JVs are from global leading car-

³⁵⁶ Ohara, Moriki, *Interfirm Relations under Late Industrialization in China, the Supplier System in the Motorcycle Industry* (Institute of Developing Econoimics, Japan External Trade Organization, Chiba, Japan, 2006). Pages 19-21.

producing countries, whilst in the motorcycle JVs there are only three Japanese makers.

Third, manufacturing an automobile, as explained in Section 7.3, is a sophisticated process that requires various technologies to deal with differences in consumer's preferences in style, utility and car performance, and much stricter government regulations on safety and emissions. In particular, the development of a core engine for cars is costly and the outsourcing of it is difficult and could lead to adverse consequences.

A poll was held with the top management of the major Chinese car companies at the Shanghai automotive trade show in April 2009.³⁵⁷ When asked for their opinions on foreign investment policy with regard to the fifty percent ownership rule, eighty percent of the CEOs interviewed, including those of major JVs preferred the status quo. On the other hand, seventeen percent of the interviewees (mostly indigenous firms) supported free trade through the lessening of share control, arguing that the policy should be entirely open and that the JV should not be the only option for or the sole destiny of the auto industry. Although such industry views may not have been reflected in the

³⁵⁷ Anon., 'Liucheng laozong jieshou hezhi gubi xianzhuang ercheng fandui kaifang,' 6 成老总接受合资股比现状 2 成反对放开, (Sixty percent of interviewed CEOs accept the status quo of existing shared structure; twenty percent are opposed; seventeen percent supported conceding more shares to foreign companies in JVs), 4 April 2009, available at <http://auto.sohu.com/20090424/n263608079.shtml>, accessed 16 December 2009.

government's investment policy, it certainly indicates that the Big Three and Small Three have been lacking in confidence regarding their self-reliant capacity in core technology, which is why they wished to remain in the existing JV setup. Indeed, it may be fair to surmise that even with a policy stipulating more dominating majority shares for these SOEs in the JV makeup, there would be no guarantee of a rapid transfer of core technology.

2. Foreign partners in the JV restricted their China-made products for exports and avoided the low-end market.

There was no policy mandate restricting the export of JVs' products; it was up to the partners in JVs to determine whether exporting is in their best interests. In targeting markets, both parties in the JVs agreed that the cars manufactured in China were for Chinese domestic consumption only. Chinese partners were not sure whether it was in their best interest to export the JV products through the networks exclusively controlled by their foreign allies, so they did not insist on it. But foreign partners insisted that the JVs should not export Chinese-made products to their overseas marketplace to compete against their home products, especially the German, Japanese and Korean partners, whose primary corporate strategy was export. The only exception was CHAC, in which Honda

has a majority of sixty-five percent and in which GAIC has a minority of thirty-five percent ownership. The product of this partnership, as explained in Section 3.3.3, were strictly for export only, and hence GAIC merely played the role of assembler. The general restriction of export for Chinese partners in the JVs is against China's long-term interests. Its effect has been that, whilst foreign partners have restricted JV products for Chinese domestic consumption only and not for export, the products made by indigenous firms were unrestricted and consequently became competitive as exports to developing countries. As explained in Section 4.3.2, Chery, Geely and Great Wall have made progress exporting products to such markets. Evidence outlined in Section 3.2, has shown that in 2005, China for the first time exported more vehicles than it imported, which boosted the confidence of both the government and the indigenous automakers. After China's entry into the WTO, the reduction of the import tariff on components and, therefore, on the development cost of new models created more favourable conditions for the indigenous automakers. This allowed them to follow in the footsteps of their Asian counterparts, such as Honda, Toyota and Hyundai, in seeking out their respective export niches. Companies such as Chery, Geely and Great Wall have subsequently become national models for generating foreign revenue.

As the evidence summarised in Section 6.3 conveys, the JVs dominated the market of medium and full-size cars with government backing in institutional purchases and in protected markets. Microcars made by indigenous automakers with an engine displacement of less than 1.6 litres were originally banned or restricted from entering into large towns for reasons of emission and congestion. However, after 2006, the switch in government policy in favour of cars built with lower emissions provided indigenous automakers with an opportunity to re-enter metropolitan areas. They soon found niche markets for their products in low-end markets and secondary cities, which the JV had overlooked. When JVs began to rediscover the market they had neglected, the indigenous companies had already established their positions in those markets.

3. The lack of core technology resulted in constraints and limitations on the Chinese automobile industry's ability to upgrade.

Fundamentally, the core technology owned by the foreign partner in a JV has been shown not to be transferrable and legally duplicated. The development of products is a crucial stage in the automobile industry's manufacturing process prior to actual production, sales and after-sale service. In developing new car models, Chinese companies relied on foreign partners for designs and blueprints of production models, which are considered

exclusive intellectual properties. In choosing engine sizes, transmission types, chassis designs and electrical systems, Chinese companies had to follow their partners' lead; in short, they had the right to 'use' and 'observe' the designs but could go no further. This gave rise to awkward situations in which, even when Chinese partners found mistakes in blueprints, they were not allowed to correct the mistakes. Such mistakes had to be rectified within the procedures of the design department of their partners. Chinese companies participated in the process of design and development, but final approval to manufacture any product had to be subject to ratification by their foreign associates. Consequently, Chinese partners continue to be the 'manufacturers' and foreign companies remain the 'designers' in the JV setup, without any prospect of extending the Chinese partner's role.

Without intellectual property rights and confirmation of the final product, Chinese companies could only play a limited role in manufacturing and share a limited value-added profit, not to mention that substantial quantities of knock-down (CKD) vehicles have been brought into China merely for assembly. Under the technical leadership of the foreign companies in JVs, Chinese partners could not even set up separate R&D divisions with technology of their foreign partners. As this thesis attests in Section 4.4, despite

their comparative advantages in resources and government policy backing, the Chinese partners have not gained the capacity for self-reliant auto production through their JVs over the past twenty-five years. In short, technologies have been imported, rather than assimilated. The ultimate objective to achieve the transfer of core technology did not succeed as intended.

4. The major automobile policy guidelines have been increasingly modified since 2001 to support an indigenous auto industry.

As a result of China's entry into the WTO in 2001, governmental policy became more relaxed and general financial conditions more liberal. Principles of fairness and equality had to be granted to foreign countries in business practice. The notion of constraining maximum control in foreign investments in the shares of the Chinese automobile industry was once again challenged. Within the framework of the WTO, there has been no immediate demand for China to surrender the rule that a minimum of fifty percent of shares should be owned by Chinese firms. Therefore, many foreign companies tried to seek control of the JVs through raising capital and through consolidation and acquisition of shares in publicly-traded Chinese firms. To deal with such emerging pressures, the Chinese government had to modify its industrial automobile policy to achieve dual goals:

to speed up China's automobile industry in order to become one of the leading car-producing countries in the world and to promote development of the Chinese indigenous automakers. Both of these goals are linked but associated with different interests.

The first goal seemed readily achievable, thanks to rapid economic growth, China became the number one car-producing and car-selling country, surpassing the USA and making approximately thirteen million combined units of both passenger cars and trucks in 2009. This figure only indicates that China is the largest car producing country, not the most powerful one because the Chinese market has still been dominated by the JVs.

The second goal needed clearer government guidelines to balance the interests of Chinese indigenous manufacturers, and the foreign ones represented in China by the existing JVs.

The government's policy had historically favoured the JVs with regards to corporate tax, institutional purchases and financial backing. It is worth noting a vital change of government emphasis in China's 'Eleventh Five-Year State Plan' (2006-2010), which not only sets up guidelines for the general Chinese automobile industry targeting total production of nine million units in 2010 (unexpectedly achieved in 2009), but also sets out a target directive for indigenous automakers to achieve a sixty percent market share

for passenger cars.³⁵⁸ These guidelines may not have an obvious effect on purchasing habits of private consumers (about thirty percent of the market), who are not subject to government economic policy in making their own purchases. However, the mandates to increase institutional purchases, from the original ten percent to fifty percent in 2010 provide strong strategic support and are an effective measure taken towards embracing the indigenous industry. Based on this mandated distribution plan, the Chinese indigenous automakers could expect to gain a share of a market worth billions of dollars.³⁵⁹

This thesis has outlined other prospects for Chinese indigenous auto makers. Firstly, an expanding niche of microcars is expected to benefit the specialised indigenous companies. The recently established guidelines, driven by China's increasing

³⁵⁸ Zhongguo Qiche Gongye Xingxi Wang, 'Zhongguo qiche xiangguan gongye shiyiwu zhuanli fazhan guihua yanjiu gaiyao' 中国汽车相关工业“十一五”专题发展规划研究概要 (The Summary of special study and research on China's automobile industry according to China's Eleventh Five-year State Plan), 2007-01-09 available at http://www.autoinfo.gov.cn/autoinfo_cn/lbj/tbgz/syw/webinfo/1182388344493521.htm, accessed 20 December 2009.

³⁵⁹ Anon., Renmin Wang, 'Zhongguo Zhengfu qunian hua babaiyi caigou qiche, Jingnian huoqing qianyi' 中国政府去年花 800 亿采购汽车 今年或近千亿, (The Chinese government spent 80 billion RMB on institutional purchases in 2008, and may increase to 100 billion RMB in 2009), 29 December 2009, available at <http://ccnews.people.com.cn/GB/142052/10668550.html>, accessed 8 January 2010.

consumption of petrol and its concern regarding carbon emissions, signify promotion in the market share of microcars with an engine-displacement of less than 1.5 litres to sixty percent of the entire passenger car market. Secondly, the Eleventh Five-Year State Plan aims to help the automobile industry, along with other industries such as electrical appliance, tourism and home-construction, by supporting China's 'countryside' markets. Thirdly, more favourable policies were introduced after 2007, including the reduction of the consumption tax on smaller-engine cars and a cut to the value-added sales tax. These measures were all designed to overturn the previous restriction on subcompacts from entering cities and to promote budget cars chiefly manufactured by indigenous automakers. Although the building of an indigenous industry was not a high priority in the state plans of the Chinese government in the early 1980s, it now seemed to be rising in importance. It is clear that China intends to support indigenous producers such as Chery and Geely, whereas previously it had discouraged or even discriminated against them. Furthermore, during the poor global economy in 2008, Chery received a loan of 10 billion RMB (approximately US\$ 1.65 billion) from China's Bank of Import and Export. The infusion of such large funding to an indigenous provincial firm was a first in the history of the Chinese automobile industry, sending out a strong signal regarding the government's backing for Chery's production for both domestic and export markets. In

addition, Chery was also given purchase orders from the Department of Public Security, which were previously bestowed only on JVs. Under these favourable terms, the share of the Chinese indigenous automakers has shown an increase to approximately twenty six and thirty percent of the entire Chinese passenger car market in 2008 and 2009 respectively.³⁶⁰ The position of the Chinese indigenous automakers has been steadily established, as reviewed in Chapters 6 and 7, through various external and internal determinants. Although government policy was unhelpful during the early development of the Chinese market, it has started to change.

The above four points may help us understand the transition from China's quest for an automobile industry to its acknowledgement and even support of the existing indigenous and independent car industry. Although rates of car ownership per thousand were still less than thirty as of 2008 (compared to approximately 380 in the UK and 480 in the USA),³⁶¹ the Chinese automobile industry's accelerating growth was in general

³⁶⁰ Anon, 'Zizhu Pinpai Quanmian Fali', 自主品牌全面发力(The Indigenous Brands Expands in Full Scale) China Auto News, 21 January 2010, available at <http://www.qiche.com.cn/files/201001/21052.shtml>, accessed 28 January 2010.

³⁶¹ Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian*, 中国汽车工业年鉴 (China automotive industry yearbook), 2005, Page 683; 2007, Page 633; 2008, Page 650. Anon., World Bank, World Development Indicators, Transportation Statistics, available at http://www.nationmaster.com/graph/tra_car-transportation-cars, accessed 25 December 2009.

substantial and promising. As with Japan, the USA and an emerging India, China also has a larger potential domestic market that warrants the domestic production of automobiles. Southern China in particular has become one of the most promising markets for passenger cars in Asia. Recent favourable conditions in China's increasing purchasing power parity, saving rates, urbanisation and private ownership of cars have led to structural changes in its consumer market. Under the existing JV's setup, China would always need to share profits with foreign partners, be restricted to the limited share of profits arising from car assembly. It would be unable to own the intellectual properties, and remain reliant and exploited as the labouring player of the global industry with limited bargaining power. Relying on outsourced engines would compromise profitability and competitiveness, whilst sourcing technology via mergers and acquisitions of collapsed automobile plants would generate little prospect for next-generation R&D of core technology. These all relate to the above-mentioned arguments on the disappointment of JVs and the numerous adjustments of government policy in addressing China's need and motivation for building its indigenous automobile industry. In brief, China has realised that the overall Chinese automobile industry is incapable of upgrading itself through developing the JVs.

This short-term success of the Chinese indigenous automakers has suggested the next question: can they sustain their growth under the growing dominance of major global automobile companies in the long run as they will inevitably be challenged by cost escalation and fiercer competition? Womack, Jones and Roos suggest in *The Machine that Changed the World*, a classic book on how lean production evolved and prevailed in the world auto industry in the 1980s, that the Japanese revolutionary lean design and production had become imperative benchmarks for automakers to embrace and stay competitive and sustainable. Womack, Jones and Roos argue that through ‘Kaizen’, the incremental improvement in production, teamwork, communication, product design and processes, an optimised manufacturing efficiency could be achieved. At the same time, component suppliers could improve the quality of parts and cut costs, passing the savings on to car manufacturers and, ultimately, consumers.³⁶² Another particular feature of managing the Japanese lean enterprises is ‘Keiretsu’, the network of businesses that own stakes in one another as a means of mutual security that includes large manufacturers and suppliers of raw materials and components.³⁶³ In view of the importance of these key

³⁶² Womack, James P., Daniel T. Jones and Daniel Roos, *the Machine that Changed the World* (New York: Maxwell Macmillan International, 1990) Pages 148-153.

³⁶³ Ibid., Pages 192-198.

elements for success, some reflection on the manufacturing process controls and the process of comparison amongst the Chinese automakers seems appropriate.

It is not clear whether lean production on a large scale is the appropriate standard for the Chinese indigenous automakers to embrace for the meantime. Chinese indigenous automakers may not have the capability to instantaneously implement such a system, as it took even the more advanced American and European automakers a long time to achieve.

In the Chinese context, the indigenous companies have so far indentified and established both a production niche and a market niche. The production niche was the assembly of vehicles with low specification by relatively cheap labour and with relatively unsophisticated technology. This could be done profitably at a smaller scale. The JV neglected this niche as their technologies and costs were oriented towards more complicated markets. On the demand side, the Chinese indigenous automakers were able to take advantage of an expanding market for private transportation on the part of a growing middle class and also small businesses.

The scattered and numerous Chinese component manufacturers did not form strong and efficient manufacturing groups to support the indigenous automakers. They lacked the capital to renew their manufacturing equipment and had little ability to recruit

professional and skilled workers. The problem was compounded by that most component factories depended on the specific designs allocated to them by their foreign partners. As in Japan, the manufacturing collaboration between producers and their 'Keiretsu' partners is characterised by simultaneous design and development alongside the production lines of the car manufacturers, rather than implementing it with the typical top-to-bottom pattern. Chinese indigenous automotive firms have not built up their 'Keiretsu', or dependable and long-term multitier component suppliers that could play their role in providing automakers with financial resources and stable component supplies. They also suffered limited access to technologies and unstable reliability of their component providers. Although more established and advanced component factories were formed based on the JV arrangement, the technology was still kept proprietary and confidential. As a result, the Chinese indigenous automakers had to struggle to ensure consistent quality and had limited control over the cost and quality of outsourced components.

Another drawback is that diverse foreign car and component manufacturers brought in different industrial standards to the Chinese component factories. It has been difficult and costly for general Chinese manufacturers to adopt a standardised and systemised process in their development of components that must meet the different industrial paradigms of

countries like the USA, Germany, Japan and Korea. As a result, many Chinese component factories ended up manufacturing similar but not interchangeable parts. For instance, there were three catalytic converter exhaust companies that supplied SAIC-GM, SAIC-VW and FAW-VW, respectively.³⁶⁴ These component suppliers did not accumulate capacity to produce value-added components and therefore could not avoid unnecessary overlapping in tooling and production before economies of scale were achieved.

Foreign partners in the JVs brought in their own component suppliers from home to ensure backup supply, retaining control over the core technologies. The Chinese indigenous automakers were limited in investment and financing. One of the policy changes following China's admission into the WTO was the lifting of its restrictions concerning minimum Chinese ownership in the component manufacturing industry. This easing-up of protectionism allowed foreign component companies to gain control over the component manufacturing of JVs. The trend of taking over component companies

³⁶⁴ Interview #10, component suppliers in Shanghai, July 2007. Delph China for SAIC-GM's Buick; Red Lake for SAIC-VW's Santana; Shanghai Walker for SAIC-FAW's Passat model; Anon., China Auto Parts Suppliers Federation, Official Website, Zhongguo Qiche Lingbujian Gongye Xiankuang, Wenti Ji Fazhan 中国汽车零部件工业现状,问题及发展研究 (The study on the status, problems and development of Chinese automotives industry), 15 March 2009, available at <http://www.chinauto.gov.cn/autom/news/template/main.jsp?articleId=10002170>, accessed at 28 December 2009.

was on the rise, as seen in JVs that produce engines for FAW-VW's JV and GAIC-Honda's JV, where VW and Honda possessed a majority of shares (sixty percent and seventy percent respectively) over their Chinese counterpart of FAW and GAIC (forty percent and thirty percent respectively). This has limited the access to sourcing and weakened the growth of Chinese indigenous component factories.

In addition to the limited access to component technology, the investment on R&D by the indigenous automakers was much lower than that of the JV's foreign partners. As explained in Section 7.1, Chery, Geely and BYD were the only indigenous players that invested substantially on R&D and developed their own engines. Chery made a successful attempt to adopt lean production and to remain competitive and up-to-date with a broader vision that is in line with the modern process of manufacturing. This was reflected in its introduction of a metric of 'vehicle production per employee' to evaluate its manufacturing efficiency. Geely and Chery actually led SAIC, FAW and DMC in this productivity measurement between 2001 and 2007, representing considerable success stories for the indigenous auto industries.³⁶⁵ Their new models with self-developed

³⁶⁵ Zhongguo Qiche Jishu Yanjiu Zhongxin (ed.), *Zhongguo Qiche Gongye Nianjian*, 中国汽车工业年鉴 (China automotive industry yearbook) for 2008, Pages 120, 123, 126, 147, 152, 447; for 2007, Pages 81, 82, 84, 87, 111, 112, 450; for 2006, Pages 114, 118, 122, 155, 506; for 2005, Pages 52, 55, 59, 480; for 2004, Pages 35, 38, 42, 407; for 2003, Pages 65, 68, 71, 415; for 2002, Page 381.

engines have in every respect impressed their competitors and investors. However, due to low production unit value of their product and their increasing investment, the route for expansion will be neither smooth nor easy. The evidence in Table 4.3 of Chapter 4 suggests that both leading indigenous companies Chery and Geely are in a trajectory of declining profits.

There is a clear difference between JVs and indigenous firms in terms of their organisation. The Chinese indigenous automakers do not have advantages in human resources and organisation experience compared to those Chinese firms partnered in JV schemes, but they enjoy the freedom of building an organisation according to their own capacity and plan. The purpose of setting up JVs is to combine the advantages of each partner to generate maximum payoff. Because of the 50/50 sharing distribution of the JVs, they are often challenged with instability and uncertainty due to differences in culture, political systems and personal values. Both Chinese and foreign partners in the JV had to follow the rules mandated by the government's investment policy. The functions and performance of individuals are less important than the collective goal, and

everyone in the organisation considers himself as part of a unit, subject to collective training, discipline and awards. Due to the government's protective measures and favourable terms, Chinese managers and workers in the JVs could enjoy more job security and effectively worked as government employees.

In contrast, the Chinese indigenous automakers had to manage their manpower and bear the consequences of their decisions. As explained in Chapter 4, Chery is fundamentally a provincial enterprise, but the CEO Yin Tongyao enjoyed more independence of recruitment than the Big Three. Yin had discretion to hire experienced executives and to dismiss others. As with any other private enterprise, Geely's Li Shufu had full control of the management. Li recruited and discharged employees and decided compensations according to his own budget and employees' capabilities. Through the interviews held with various factory managers during the course of this study, a large disparity in pay scales has been observed (as evidenced in Section 7.13). This indicator may explain why the turnover rate of personnel in indigenous companies was so high and why the hiring process was so difficult. Dependence on the recruitment of high-ranking and experienced engineers from overseas was not effective, as exemplified in Section 4.3 regarding Chery's human resources. Only the privately-owned Geely had made active attempts

dealing with the unstable employment and recruitment situation. Its creation of the automotive-related Beijing Geely University helped Geely to maintain a higher percentage of trained and educated factory employees and a store of human resources.

Both JVs and indigenous firms' pursued a common goal of maximising market share through manufacturing and marketing of their products. Since the boards of the JVs are controlled by foreign partners, planning and implementation of strategy are subject to the approval of their parent companies. The JVs have taken advantage of government policies to secure substantial institutional purchases, which accounted for approximately seventy percent of the entire market demand. Competition exists among JVs in terms of territorial dominance, as exemplified by FAW-VW's competition with SAIC-VW on comparable models. In northern China, FAW-VW controlled almost the entire market, while SAIC-VW dominated the Shanghai metropolitan area. In this regard, the JVs enjoyed the institutional purchase market, but it was VW, not its Chinese partners, who controlled the marketing strategy to design the models for the respective marketplaces.

In contrast, indigenous automakers have limited government support and had to seek alternative geographical regions (such as second-tier cities) and niche consumer markets (such as budget-car buyers) for their sales. Being constrained by limited capital and

engine technology, they needed to look for emerging markets in interior provinces where quality was less of a concern than price and where low-end products were more acceptable. It is worth mentioning that the location of indigenous manufacturers, as evidenced in Figure 7.1 of Chapter 7, is diffused in various provinces, rather than focused in one particular region. As revealed in this study, indigenous firms such as Chery and Geely built factories in locations of their own choice. They successfully captured the secondary markets with microcars and looked for opportunities to upgrade by expanding and exporting their products. In terms of marketing strategy, the Chinese indigenous automakers could determine their own destiny by avoiding JV's stronghold territories and seeking their own marketplaces.

China's wish to establish its independent models and technology faced even more intense challenges after China's entry to the WTO and the reduction of the import tariff became effective. The JVs started to introduce wide-ranging products to complement their product lines, intensifying market competition. In terms of advanced engine technology, the JVs wasted no time in bringing into China the latest models equipped with more efficient turbocharged direct injection engines and hybrid drive systems, not to mention contemporary models to be fuelled by cleaner power such as ethanol and improved

diesel. As explained in Section 7.2, the Chinese indigenous automakers have benefited from technology spillovers and could source almost all required components with the exception of core engines and transmissions. This lack of modern engine technology resulted in a gap in the production process for the Chinese indigenous automakers. They could not access such products because engine technology is proprietary and not available on the open market. At the same time, they must have realised the fact that they could no longer rely on the government's protective measures without producing models to meet basic requirements for safety and emissions. Accordingly, many of them outsourced using a declining Japanese manufacturer such as MMC or contracted overseas engine companies, as Chery did with AVL and Geely with Ricardo. BYD claimed it had the latest battery technology that could be built into its car to make efficient hybrid models, but it has been restricted in accessing advanced combustion engine technology. Due to the lack of a national standard for electric vehicles, and limitations such as building costs and re-charging capacity, BYD's intention to build all-electric cars (without combustion engine) is still far from maturing.

Although it may appear that both JVs and indigenous firms are pursuing similar strategies of accessing and acquiring Western design capabilities in core technology, the main

difference is the relation to intellectual property rights. The Chinese partners in JVs manufactured engines, but their partners made sure to own exclusively the intellectual property and made provisions to restrict the former from revising or amending the designs. Regarding the flow of the manufacturing process, the foreign partners could not bestow rights on Chinese partners since the holders of the design must assume liability for their manufactured products by controlling the integrity of the products. SAIC's acquisition of Rover in 2006 outside its JV partnerships (with GM and VW) was a move that came rather late, almost twenty-two years after its first automobile venture with VW. The two models produced by SAIC were based on Rover's older technology and were weakly positioned, as they became subject to competition with the similar product ranges manufactured by SAIC's other JVs. Although this unsuccessful attempt has not affected SAIC's position in the industry, the poor sales of 'Roweve' indicate there is no guaranteed success for the Chinese firms in JV setup when they try to develop their own core technology.

In contrast, the indigenous firms such as Chery and Geely did not have the option of cooperating with JVs' foreign partners, so they had to accept the consequence of their own decisions by either outsourcing engines or contracting independent foreign

companies to build engines for their models. Since these engines were designed according to the requirement of Chery and Geely, the intellectual property rights belonged to them as well, and they took a proactive role in engine design and upgrade. They developed engine technology through self-motivated design processes, which they utilised to improve outdated products and complement existing ones. After they controlled and ratified the design, process and consistency of production, they claimed full intellectual property rights to the updated technology. This would allow them to continue the cycle of development and improvement.

Indigenous firms have more discretion than JVs in investment and expansion of their product lines, but they remain restricted by technological constraints. As Table 7.8 of Chapter 7 shows, MMC's 4G-series engine technology was adopted by more than ten indigenous companies at the same time. Indigenous firms that relied on the adoption of uniform engines from MMC found it an inferior solution because of the lack of uniqueness in their products, which meant that all they could compete on was price. Furthermore, the rule of the economies of scale suggests that when the production quantity increases, costs would rise in the long term and operation profits would come

under pressure.³⁶⁶ The indigenous firms need to look for options that would lessen their dependence on MMC and develop engine products that could synergise with their own product line and increase their added-value. Without strong financial backing and investment in R&D, their options have become increasingly narrower; this is precisely why Chery and Geely were anxious to obtain public capital to be technologically independent.

For most of the privately-owned Chinese companies, the economic conditions became simultaneously favourable after China's entry into the WTO. Geely, for instance, received investment funds from Goldman Sachs; BYD attracted capital from Berkshire Hathaway, which boosted its stock value in the Hong Kong Exchange. In general, such new dynamics suggest foreign optimism about indigenous automakers. All of these overseas risk funds are speculating on the future of the Chinese indigenous automakers, although it is hard to gauge how far these international funds will maintain their support and predict whether they will withdraw their investment after making short-term profits. For the moment, there is no sign to suggest that they are discouraged or retreating, and

³⁶⁶ Li, Yanyue, Jinkui Wu and Jin Shengmo in 'Zhongguo Qiche Gongye de Sudu Jingji yu Guimo Jingji Fenxi Beijing Qiche Qikan 1999, 1994-2008 China Academic Journal Publishing House, Beijing, China vol. 8, Pages 5-8; Salvatore, Dominick, *Schaum's Outline of Microeconomics* (Chicago: McGraw-Hill Professional, 2006). Page 150.

indigenous automakers have taken advantage of the money influx to expand manufacturing facilities. Chery realised that installing an outdated MMC engine technology was going to be a dead end, so it developed a full line of engine products. Similarly, Geely bought Australian Drivetrain for a six-cylinder automatic transmission that complemented its models with manual transmissions. As shown in Chapter 4, Chery developed a series of models since 2004 and took advantage of it by exporting CKD manufacturing facilities to developing countries. In 2007, Chery and Geely's engine products stood for 5.68 percent of China's entire engine production. In the passenger division, they captured 11 percent of the market in the country, representing approximately 50 percent of the production by indigenous automakers. Considering the cars with the engines autonomously developed and manufactured by Chery and Geely, the market share captured by the entire indigenous automakers was 9.3 percent.³⁶⁷

The history of the automobile industry suggests that manufacturers who could not reach economies of scale faced either phase-outs or mergers. The escalation of demand for cars attracted many firms who lacked the requisite mixture of capital, technology and vision.

As the markets matured and turned against them, these players tended to forgo their goal

³⁶⁷ This is calculated based on the ratio of Chery and Geely's engine production in 2007 (Figure 4.17) and China's total passenger car production in 2007 (Figure 1.1).

and moved in different directions; evidence in Chapter 5 has shown that there was no lack of such firms. Most Chinese indigenous firms are small-volume producers who have no self-developed technology, brand name or distinctive products. They will eventually merge or be consolidated when they fail to make sustainable products to maintain their market position. They may have enjoyed a moment of glory during rapid market expansion, but they are bound to encounter fiercer competition and greater difficulties in re-investing. The consolidation is likely to come from the JVs as they have government backing and larger financial resources. Gu Yongsheng, the chief engineer for the engine factory of SAIC and a senior executive of FAW, states that automotive engineering technology does not depend primarily on the use of expensive imported equipment and machinery, but rather on the refined design of production flows. The production flows include improvements made to the automation of existing manufacturing equipment, the just-in-time supply chain and the flexible shifting of assembly lines: a similar standpoint to that suggested by Womack, Jones and Roos. Gu further argues that the key to success in car making has more to do with the determination and application of appropriate technology than with capital investment.³⁶⁸ Only a few indigenous firms, such as Chery and Geely, seem to have had this strategic understanding and visionary implementation.

³⁶⁸ Gu, Yongshen, Shanghai Jiaotong University Gu Yongshen, 'Zhongguo Qiche Fadongji Qiye de Jingyi

World economic history is replete with developing countries trying to catch up with developed ones. Alexander Gerschenkron, the American-Russian economist, proposed a theory of late-development benefit, which indicates that several advantages exist only in developing countries. These include having more knowledge of modernisation than developed countries at the start; being able to skip many steps in their economic expansion; and being able to establish more mature plans and technologies.³⁶⁹ Eric Thun expands on this, adding that the rapid rise of certain Asian countries, such as Japan, Korea, Singapore, and Taiwan, was partially due to maximising the opportunity of ‘backwardness’ by absorbing experienced technology and capital from the economy of more developed countries.³⁷⁰ This thesis stresses that the key factor behind the difficulties of the indigenous auto industry has not been the lack of modern automotive technology, but rather the specific lack of independent engine development capacity, the acquisition of which, with strong resolve, will permit indigenous automakers to participate fully in branding, technological development and manufacturing advantages.

Sheji, 中国汽车发动机企业的精益设计 (Perfecting the design of Chinese engine manufacturers)', *Qiche yu Peijian (Automobile and Parts)*, Vol 35, (2006) Pages 28-31.

³⁶⁹ Gerschenkron, Alexander, ‘Economic Backwardness in Historical Perspective’, in: *A Book of Essays*, Cambridge, Massachusetts: Belknap Press of Harvard University Press, (1962). Pages 26-27.

³⁷⁰ Thun, *Changing Lanes in China*. Pages 4-5.

The development and manufacturing of car models by most indigenous automakers are dissimilar from the efficient systems used by the advanced Japanese, American and European car manufacturers. The standard pattern used by foreign automakers has been advancing from ‘a concept car towards the target market’ through building a matching and tested engine.³⁷¹ Most Chinese indigenous automakers did not have the capacity to design a model with a purpose-designed engine. These struggling manufacturers tended to design by imitating the body style of others and omitted many steps (such as prototype building, testing and component design) that are crucial in the shaping of a distinctive model. Some indigenous automakers (such as BCA) perceived the success of the JV as largely attributable to their powerful foreign counterparts, and did not distinguish the genuine factors, such as engine R&D, innovation and clear vision, that could enable them succeed. Some wrongfully claimed they could produce self-developed models, misleading the consumers to believe that core technology could be bought and passenger cars could be cheaply built without improving engine efficiency. Failure to acknowledge the technological gap between advanced global automakers and late-developing automobile firms has consequently caused these companies great difficulty. Due to the

³⁷¹ Clark, Kim, and Takahiro Fujimoto, *Product Development Performance*, (Boston Harvard Business School Press, 1991). Pages 97-102.

lack of distinctiveness in products, they could only compete in secondary cities (as did by Geely) and low-end markets (as in the case of Lifan) or in the rural market (in the case of Great Wall). As the marketplace expands, the JVs will also try to enter these segments.

Chery and Geely seem to have had more success than other indigenous rivals in competing in secondary markets. They discarded the CKD manufacturing method (though they still use it for export) and designed interchangeable assembly platforms tailored to their product line. They realised that without the capacity of self-development and upgrade, it becomes increasingly hard to derive their own distinguished and upgraded cars to appeal to the maturing and differentiated market. They strategically wished to leverage China's comparative advantages in low labour cost and large market size, against the cost required to establish core development capacity, product improvement and market differentiation. They also sought to upgrade the image of their own brands and obtain intellectual property rights to core technology through consolidation of some reputable yet financially-troubled overseas auto companies. As explained in Chapter 4, they claimed that they will not use their own brand or company to look for JV partners, at the price of forgoing their own development of technology. The sheer increase in the size of the domestic market's demand for passenger vehicles provided room for them to grow

and evolve, despite the fact that they were less competitive in sophisticated markets and have yet to build a global brand name.

History also demonstrates that for more than four decades, the Asian automakers had faced similar problems: Toyota was once a small volume producer; Honda developed into a car manufacturer from a motorcycle producer; and Korea's Hyundai depended heavily on JV-derived automotive technology (coincidentally also through the MMC). When Honda sold its 'Civic' model in the USA for approximately \$ 2,000 in the early 1970s,³⁷² it was seen as a low-end vehicle automaker which would not last long. The same assumption was made regarding Hyundai, who sold its 'Excel' at half the price of the popular and comparable Toyota's 'Corolla' model in the late 1990s. From these humble beginnings, both companies have gone on to become respectable vehicle manufacturers at an equal level with other major global automakers. As mergers and consolidations occurred in the USA, UK, Japanese and Korean auto industries in the early 1950s, sustainable survivors have all, out of necessity, maintained a process of continuous self-improvement in manufacturing and management.

³⁷² Anon., American Honda 50th Anniversary Timeline, Honda Homepage, 4 June 2009, available at <http://www.honda.com/newsandviews/article.aspx?id=5030>, accessed 12 January 2010.

China's insistence on holding fifty percent of ownership in all the JVs has as its objective to prevent itself from losing control of the automobile manufacturing to major foreign auto powers. However, this very same policy has led China with a heavy dependence in core technology of foreign automakers. JV partnerships seemed to have become a final end, rather than a transitional means originally designed by Chinese policy makers to acquire foreign technologies that would empower independent car production. When China opened its door to the world, it did not want to move away from remaining a world manufacturing base; it seems it was what the whole world wanted China to become. The JVs' ineffectiveness in gaining from the transfer of the core technology and their limitations in the export and secondary markets brought about the formation and self-reliance of indigenous firms. The JVs and indigenous automakers co-exist through complicated strategic, developmental and marketing factors. The move of Chinese partners in JVs into manufacturing models of their own suggests that the foreign partnership did not provide them with every essential technology, whereas the purchase of distressed firms overseas followed by the production of spin-offs from a model demonstrates that the JV partnership were not so easily exploited by Chinese partners.

It is obvious that the Chinese government's industrial policy has been inconsistent with regard to the Chinese indigenous automakers, or at least not beneficial throughout. Up to the present, China has maintained the status of the JV structure without any indication of wishing to rescind it. Whilst the British government bought shares in the troubled British Leyland Motor Corporation and the later British Leyland in the late 1970s and 1980s after these companies ran into crisis,³⁷³ the Chinese government pre-empted its major automakers and their JVs with state capital. Would protectionist policies and trade barriers serve as a panacea for the Chinese automobile industry's weakness as they did in the EU and other Asian countries such as Korea and Japan? Could Japanese and Korean automakers have developed their automobile industry in the 1960s and 1970s without policies to prevent imports? Could European automakers have maintained their majority market shares by lessening trade barriers against the more competitive Japanese products? The globalisation of the automobile industry has quickly diffused at the level of components and vehicle assembly, but hardly in the diffusion of the first-tier core technology. There are no complimentary and automatic procedures for the transfer and

³⁷³ Williams, Karl, Colin Haslam, Sukhdev Johal and John Williams, *'Cars, Analysis, History, Cases'*, (Berghahn Books, Providence, USA, 1994) Pages 134-165; Williams, Karl, John Williams and Dennis Thomas, *'Why Are the British Bad at Manufacturing?'* (Routledge & Kegan Paul, London, 1983) Pages 229- 245; Pages 263-265.

diffusion of technology between developed and developing countries, and the industry is still enmeshed in national characteristics and regional barriers.

It is not clear whether there is a single economic analysis available that is applicable to automobile manufacturing at all times and places. The automobile industry is struggling everywhere, and companies that survived successfully for decades have been failing. The worldwide auto industry seems to have difficulties resisting the wave of Japanese dominance. For all its advantages of scale, and the depth of its technological expertise, General Motors has fallen into bankruptcy. The rescue plan of the US government in 2009 to bail out the leading producers GM and Chrysler, and their component suppliers Delphi and American Axle have toppled paradigms in economic theory that were predicated on the least amount of governmental interference in the operations of privately-owned enterprises. Another ironic deviation from common economic belief was seen in the instance of Toyota, where the top-rated lean manufacturer with a sterling reputation for quality, and also the largest global auto producer suffered a fiscal loss of approximately 5 billion dollars in 2009. This is partly attributable to its largest safety recall in history (3.8 million vehicles and still unfolding) as a result of installing a malfunctioning accelerator pedal. This implies that Toyota's quality control may have

been undermined by its rapid over-production, the proliferation of its models and the swelling global ranks of employees. The strong Japanese yen against the US dollar represents a depressing economic impact on the profits of the Japanese producers and their strategy of overseas transplanting. In contrast, the market for microcars at the low-end has grown rapidly in India and China, where more sophisticated passenger cars are not yet widely affordable. As economies slow down around the globe, the major international automakers are also seeking alternative markets in which they were previously uninterested, and are now competing head-to-head with local indigenous manufacturers. There are many economic variables and business perspectives that affect the livelihood of this industry in different periods of times and in different regions to make prediction or even judgement credible.

This doctoral thesis does not intend to argue that the indigenous industry was the best way to develop China's automobile industry, nor does it argue that trade barriers and government protectionism best suit the interests of the Chinese automobile industry or of Chinese society. It is even less appropriate for the investigator of this thesis to speculate on the likely future of the industry in China, given the many imponderables that may be involved. Although there exist good industrial role models (such as Honda and Hyundai)

in geographical proximity for Chinese indigenous automakers to learn from, this thesis does not suggest Chery, Geely or BYD will be able to pursue similar pathways.

Automakers which do not acquire scale economies must consolidate, as witnessed during the merger of numerous American, French and German automakers before World War I, and also with major corporations such as VW, Renault, GM and Ford in the 1980s. It is possible that the Chinese indigenous automakers will consolidate further to take advantage of economies of scale, but at this point it is unclear which of the indigenous companies will not be among the survivors. The lack of access to cutting edge technology is a constraint faced by all of the Chinese indigenous automakers, which some of them tried to overcome by acquiring engine technology from abroad through a variety of means. The acquisition of fundamental core technology is necessary for them in order to rise up the technology ladder in the future. In order to gain control over their own destiny, the indigenous companies have begun to invest, design, manufacture and improve their own engines and models. If they are successful, then scale will follow. So far, as this study has shown, some of the indigenous firms have developed ways of accumulating capital and have developed their own engine products, while increasing their vehicle

sales and expanding their product lines; they have also continued to be profitable despite being at a less-than-optimal scale.

In conclusion, this study set out to describe and discuss the determinants of strategy among Chinese indigenous automakers, rather than to judge the merit and prospects of this strategy. It is clear that so far Chinese indigenous automakers have not all failed, and that the leading indigenous companies have established a distinctive and substantial presence in a particular segment of the market. If the Chinese indigenous automakers can make the necessary breakthroughs in engine technology, embrace a leaner form of production in both product development and engineering as Womack, Jones and Roos have suggested, they stand a chance of sustaining their success and, indeed, of catching up. If they apply capital efficiently, upgrade the market segment with added-value without sacrificing profit and quality in meeting stricter requirements for safety and emissions, and ultimately create after-sale service and brand loyalty, they could even extend their lead further in established niches. Future economic historians will have more information to make a judgement on the link between economic fundamentals and the vicissitudes in the growth of the Chinese indigenous automobile industry.

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